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AUTHOR Curtiss, Sharon L.
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ABSTRACT

Women as a group are uniquely exposed to the pressures created by multiple roles and conflicting expectations. To assess stress, health, resistance resources, and overall emotional dysphoria (anxiety, depression, hostility) of women from various occupational, marital, and parental statuses, 64 women, aged 25-45 years, completed the Scale of Stress Assessment, the Inventory of Health Status, the Inventory of Stress Resistance Resources, the Multiple Affect Adjective Checklist, and a demographic questionnaire. An analysis of the results showed that women in nontraditional occupations possessed reliably greater resistance resources than those in traditional occupations. In addition, single women in general appeared to be healthier than married women. Single mothers in nontraditional occupations exhibited the most favorable scores on all measures. Results of Pearson product-moment correlational analyses (for the overall group of 64 women, as well as for 6 major subgroupings, and the final 8 combinations of statuses) showed that overall the measures were reliably correlated with one another in 20 out of 21 possible correlations. These findings suggest that major changes in societal attitudes concerning women's roles may be affecting stress and resistance levels. (Author/BL)

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WOMEN AND MULTIPLE ROLE STRESS

A THESIS IN
Psychology

Presented to the Faculty of the University
of Missouri-Kansas City in partial fulfillment of
the requirements for the degree

MASTER OF ARTS

by
SHARON L. CURTISS

B.A., University of Missouri-Kansas City, 1981

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WOMEN AND MULTIPLE-ROLE STRESS

Sharon L. Curtiss, Master of Arts

University of Missouri-Kansas City, 1984

ABSTRACT

Sixty-four women, aged 25-45, of various occupational, marital and parental statuses, completed four measures designed to assess stress, health, resistance resources, and overall emotional dysphoria (anxiety, depression and hostility). The combinations of the above statuses produced 8 separate groupings of women in a 2 x 2 x 2 factorial design. Data were analyzed via 3-way ANOVAs performed on each measure. These analyses revealed that women in nontraditional occupations possessed reliably greater resistance resources than those in traditional occupations. In addition single women in general appeared to be healthier than married women. Single mothers in nontraditional occupations exhibited the most favorable scores on all measures. Pearson product-moment correlational analyses were performed for the overall group of 64 women, as well as for 6 major subgroupings, and the final 8 combinations of statuses. Overall the measures themselves were reliably correlated with one another in 20 out of 21 possible correlations.

This abstract of 148 words is approved as to form and content.

Daniel Levinson

The undersigned, appointed by the Dean of the School of Graduate Studies, have examined a thesis entitled "Women and Multiple-Role Stress" presented by Sharon L. Curtiss, candidate for the Master of Arts-Psychology, and hereby certify that in their opinion it is worthy of acceptance.

Daniel Levinson, Ph.D.
Department of Psychology — 12 April '84 Date

Charles L. Sheridan, Ph.D.
Department of Psychology — 12 April '84 Date

Bernard Lubin, Ph.D.
Department of Psychology — 23 March '84 Date

TABLE OF CONTENTS

Chapter 1	General Overview: Stress and Women	1
Chapter 2	Concept of Stressors: Physical, Psychological, Social	5
Chapter 3	Physiological and Psychological Responses to Stressors	20
Chapter 4	Stress-Related Diseases	25
Chapter 5	Stress and Mental Illness	48
Chapter 6	Stress-Related Disorders	51
Chapter 7	Women and Stress: Influential Factors	57
Chapter 8	Method	79
Chapter 9	Results	84
Chapter 10	Discussion	94
References		103
Vita		131

LIST OF TABLES

1. Means: Overall Sample and Major Groupings 85

2. Means: Final 8 Conditions 86

3. Correlations: Final 8 Conditions 88

4. Correlations: Overall Sample and Major Groupings 89

CHAPTER 1

GENERAL OVERVIEW: STRESS AND WOMEN

The nature and extent to which stress is experienced has changed in conjunction with changes in industry, technology, science, medicine, labor, politics, the economy, the environment, and social standards, the latter especially with regard to women's rights. These changes have grown so numerous and accumulated so rapidly that they have created problems in living which are evident in the manifestations of stress-related diseases and disorders presently occurring in women (Friedan, 1981; Kinzer, 1979). Perhaps the changes most difficult to adapt to psychologically are those social standards which are internalized during childhood. These same standards became an issue of the Women's Movement in terms of sex-role behavior, sexual inequality, women's rights and the demands for radical change, which set the stage for women to experience the stress of internal and external conflicts between old traditional values and new egalitarian values. Among women, this has resulted in the formation of a continuum of negative coping reactions to the stress induced by the conflict (Friedan, 1981). On one end of the continuum is denial, as in: "(my) life is perfect, nothing needs to be changed"; on the other end of the continuum is complete rejection of all old values and rejection of traditional nurturing needs; resulting in for example, runaway wives and mothers. The median

reactions consist of confusion and indecision; women in this situation are caught between old and new, and therefore they try to fill both new and old roles. These are the women who eventually become known as "superwomen."

The superwoman (Friedan, 1981) is defined as a woman who performs multiple roles such as wife, mother, housewife, working woman, and performs all to perfection, while always maintaining an image of health and happiness. In what has been termed the second stage of the Women's Movement (Friedan, 1981), the superwoman role has been selected as a source of disillusionment with the Movement and a source of additional internal conflict for many women with careers and/or families. Women are presently asking questions about choices that were supposedly won by the Movement, which have turned out not to be real: "They say we can have it all. But how? .... I'm not sure I can be a superwoman. I'm frightened that I may be kidding myself." (Friedan, 1981, p. 16). "How can I have the career I want, and the kind of marriage I want, and be a good mother?" "Do I have to be a superwoman?" "Can I make it in a man's world, doing it the man's way? But what is it doing to me? Do I want to be like men?" (Friedan, 1981, pp. 34-35). "How can a woman freely 'choose' to have a child when her paycheck is needed ..., when her job isn't geared to taking care of a child, ... and no assurance that her job will be waiting for her if she

takes off to have a child?" (Friedan, 1981, p. 23). Women are discovering that whatever equality was won, is not workable, but there is no going back (Friedan, 1981). The old conflicts between needs and social standards of behavior still remain; women are still torn between what they need and what they have been told to need; what to be satisfied with, and now what not to be satisfied with. Women are also isolated as a group because they are uniquely exposed to the pressures created by multiple roles and conflicting expectations (Ibrahim, 1980).

Keeping in mind the aforementioned general conflicts, consider a woman, who as a matter of circumstances such as death of a spouse or divorce, cannot choose between working or staying at home; left alone, with dependent children, with no other source of income except hers and no one with whom to share the responsibilities of the home and child care. This woman must play the roles of both parents, including being a provider, nurse, bookkeeper, cook, housekeeper, teacher, chauffeur, as well as doing laundry, being responsible for household and vehicle maintenance, and possibly attending classes in order to get a higher paying job. Then, if she can, she must find time for her own individual needs without feeling selfish or guilty.

A question that can be formulated from these data is: Since women, married or single, may play all these roles, which status

is more stressful? The life of single-parent mothers may be more stressful, because of one single fact: they do not receive any of the needed positive social supports (Kinzer, 1979). Consider the disadvantages of single-parent mothers as compared to single-parent fathers: 1) the income level of women is less than for men with the same educational background; 2) single-parent fathers are praised and congratulated for performing the superhuman task of being sole parent and provider, whereas single-parent mothers are not; 3) there are differences in socialization each received in childhood, i.e., women have been taught that the cleanliness of their homes reflects their worth as wives and mothers, so good housewives and mothers are supposed to have spotless homes; boys are allowed to get dirty and make a mess, so later on messy homes managed by single-parent fathers are acceptable and they do not indicate that they are bad fathers (Kinzer, 1979). Married women, even in unstable marriages, receive more social support than divorced or widowed women because married women are still playing their traditional socially acceptable roles (Friedan, 1981; Griffin, 1981; Kinzer, 1979). Before a comparison of stress levels can be made between married and nonmarried, maternal, working women, stress must be defined and its nature and consequences examined in general and in particular as related to women.

CHAPTER 2

CONCEPT OF STRESSORS: PHYSICAL, PSYCHOLOGICAL, SOCIAL

Stress, as defined by Selye (1952, 1976a, 1976b, 1977) is the nonspecific response of the body to any demand made upon it. Medical research has shown that in many respects all bodies respond in a stereotypic manner to cope with any type of increased demand. There are three categories of factors within the stress concept (Morse & Furst, 1982); these are stressors, an individual's makeup and the stress response itself. Selye (1952, 1976a, 1976b, 1977) defined stressors as factors which all produce essentially the same biologic or nonspecific stress response. Morse and Furst (1982) extended this definition by subcategorizing the stressors into three types: physical, psychological and social.

Physical stressors include external factors, such as drugs, pollutants, bacteria, viruses, radiation, noise, trauma, and exercise. A physical stressor that mothers and/or working women must cope with continually is noise. Intense noise produces morphologic, hormonal (endocrine), metabolic, neurological and various hematologic changes characteristic of the stress response in humans (Selye, 1976b). Other physical stressors will be reviewed as part of conditioning factors.

Psychological stressors include intense emotions, influenced by an individual's perception, which may be realistic, exaggerated

or imagined. These emotions include anxiety, guilt, fear, frustration, anger, hate, and sadness (Morse & Furst, 1982). A psychological stressor to which women seem to be more susceptible is anxiety. Morse and Furst (1982) described two types of anxiety which may have been precipitated by some external event. The first, generalized trait anxiety, is anxiety experienced as a personality characteristic or as an inherent part of the person's life, such as the traditional attitude or treatment of women as "second class citizens." The second is transitional situational anxiety, whereby women that assert their independence and who try to live within a new set of values become anxious as a result of the unresolved internal-external conflicts with the old values that they were taught as children.

Another psychological stressor which may be a result of or be exacerbated by the effects of the Women's Movement is frustration. When efforts to attain an important goal are blocked, the individual becomes annoyed, confused, and angry, or in another word, frustrated. Many researchers have stated that marriage is stressful for women and stress reducing for men (Kinzer, 1979; Stewart & Salt, 1981). A man receives gratification from both work and family; a working woman, however, may experience only frustration because she usually must take a less satisfactory work position and yet continue to fulfill her "duties" in the home.

Aside from this situation a woman, traditionally, must choose between self-satisfaction and satisfying others. Women experience confusion and frustration when they must choose between satisfying their needs or the needs of others.

Other psychological stressors which primarily affect women include feelings of shame and inferiority. The subjugated role of women in society has nurtured these feelings and incorporated them into women's personalities (Friedan, 1981; Griffin, 1981). In stressful situations which produce anger, women find that the nature of their traditional role places them in a double-bind situation, with regard to the manner in which they choose to deal with their anger. If they suppress it they experience frustration; if they openly express it they experience shame, thereby producing a psychologically and physiologically stressful, no-win situation (Friedan, 1981; Griffin, 1981; Kinzer, 1979; Lewis, 1978). Selye's (1952, 1976a, 1976b, 1977) theory states that it is immaterial whether a stressor or stressful situation is pleasant (eustress) or unpleasant (distress), because either type will produce a nonspecific increase in the body's need to perform certain adaptive functions and then to re-establish normalcy. Selye cited studies which found that pleasure .... "sudden joy, like pain or grief can produce adrenergic activity with acceleration of the pulse, a rise in blood pressure and excessive

mental arousal" (1976, p. 244). In Selye's (1952, 1976a, 1976b, 1977) terms it is not the type of stress which is of concern, but the intensity of the demand for readjustment or adaptation required of the body.

Social stressors are externally induced by the interaction of the individual with the environment. Those social stressors especially traumatic to women are the death of a spouse or divorce (Gordon, 1979; Petrich & Holmes, 1970). These women experience the grief of loss and pain of separation or abandonment, the fear of isolation, anxiety over sudden, unprepared-for responsibilities, and guilt and/or shame for perceived failure in their expected roles. These severe life stressors can precipitate serious mental and physical illnesses, which sometimes can prove to be fatal (Petrich & Holmes, 1977).

The factors which contribute to individual makeup are personalities, traits and attitudes, genetic factors, and environmental conditions (Morse & Furst, 1982). Personalities refer to a "group of specific behavioral patterns which reflects thoughts, attitudes and emotions as an individual adapts to various life situations" (Morse & Furst, 1982, p. 27). Personalities, as they relate to sex roles, particularly those of women, are considerably influenced by society and cultural norms (Bem, 1976; Griffin, 1981). Until recently the personality type

considered as the norm for women was the "non-competitive" personality (Mischel, 1976). A person possessing this type of personality avoids competition or any situation which is potentially stressful. With regard to disease-profile personalities, the competitive, aggressive (Type A) has been represented by the male (Friedman & Rosenman, 1974), while the opposite personality (Type B), which is passive and restrained, has more frequently been represented by women. Since the rebirth of the Women's Movement in the 1960s, competitive business positions, once exclusively male, are more frequently being filled by women. Subsequently, more Type A personalities are being found among women (Waldron, 1978). There has also been an increase, among women, of the "ulcer personality" which was once only prevalent among men (Arehart-Treichiel, 1977; McKeown, 1980; Pflanz, 1978). There are other personality types which remain prevalent among women, but the one becoming a major disorder is the "depression-prone personality", described as outwardly happy, but inwardly tormented (Sword, 1977). Another type of disease personality found frequently among women and closely related to depression is the "migraine headache personality" (Cohen, Rickles & McArthur, 1978). This personality type has obsessional-perfectionist traits and suffers frequently from anxiety, in addition to depression. Another personality type well

represented by women, which may be linked to depression, is the "cancer personality" (LeShan, 1966). A disease personality associated with women which is especially stress-related is the "rheumatoid arthritis personality" (Moos & Solomon, 1978). These women are said to be unhappy in the traditional sex role. Another stress-related disease personality which predominately affects women is the "ulcerative colitis personality", which has been shown to have some correlation with problems in the home and on the job (Grace, Wolf & Wolf, 1951).

Traits and attitudes are particular characteristics of a personality which may be relatively fixed. Studies have found that an individual's propensity toward the development of certain stress-related diseases and disorders can be determined by the specific traits and attitudes of that individual, which interact with many other factors preceding the onset of disease (Grace & Graham, 1952; Graham, etal., 1962; Holmes, Jaffe, Ketcham & Sheehy, 1961).

The genetic factors considered by Morse and Furst (1982) are age and sex. Developmentally, as individuals age they encounter stressors which are relative to particular phases of psychological and physiological maturation. An example of a stressful developmental period is adolescence, when an individual experiences radical physiological and psychological changes.

Later in social development, the early struggling years of marriage have proven to be an especially stressful time during a woman's adult years (Gould, 1978; Sheehy, 1976). From a physiological aspect of age, many biochemical differences are considerably influenced by age, which result in changes in the rate of adaptability in responding to stressors, "the well-known loss of adaptability becomes increasingly evident as an organism ages" (Selye, 1976b, p. 358). An example of this statement is that noise disrupts the normal sleep patterns of aged people to a greater extent than that of twenty-five year-olds (Selye, 1976b).

In the past, a combination of factors have made women more resistant than men to stress. The traditional stay-at-home attitude, noncompetitive personality and family-raising life-style of women in combination with the protective properties of naturally occurring estrogens (vs. supplemental estrogens) during the reproductive years, has shielded women against stress-related diseases such as hypertension, heart disease and ulcers, which have plagued men for many years. As the number of women employed in traditionally male-dominated occupations has increased there have been indications that there may be an increase in the female incidence of these stress-related diseases (McKeown, 1980; Pflanz, 1978).

Environmental conditions and conditioning factors are incorporated into the individual's makeup and influence the

organism's ability to respond and adapt to stressors. The main factors in this category are diet, drugs, occupations, location of work and residence, family and social structure, physical and mental fitness, emotional stability and the ability to relax (Morse & Furst, 1982). In addition, vibration, light rays, weather, boredom, perceptual isolation and temperature shall also be reviewed (Selye, 1976b).

The nutritional well-being of an organism directly prepares or limits its ability to cope and adapt to any stressors. The dynamic equilibrium is easily disrupted, regardless of cause, by accumulated cellular damage from a stressor. Supplemental nutrients can improve resistance to disease and stress. "Under conditions of stress and or illness, your requirements for many nutrients will be higher, including vitamins C, E, A, and pantothenic acid, etc." (Pearson & Shaw, 1982, p. 436). If the body cannot obtain essential nutrients from dietary intake it will pull what it needs from bodily stores and derive others by breaking down lean (muscle) tissue and bone. An extreme example of this is anorexia nervosa (Shiner, 1980). Despite the controversy over which type of diet and supplement plan is optimal to heighten resistance to stress and disease, there is agreement that both excessive and deficient food intake is detrimental (Selye, 1976b).

Resistance to disease and the ability to avoid the detrimental effects of stress can also be reduced by using any drug or foreign substance. Some substances included in this category would not be classified as drugs, but in view of their addictive abilities, and their inhibitory or damaging effect upon the body's immune system, they are included. Substances are identified with stress-related diseases and disorders are: caffeine increases the risk of peptic ulcers, bladder cancer and heart attacks (Manber, 1976; Maugh, 1973), and can act as a severe stimulant; nicotine from tobacco is related to respiratory diseases; sugars, play a role in hypoglycemia, hyperglycemia, obesity, dental caries, and hypertension, all of which have many related secondary disorders; alcohol is, of course, related to the stress-related disorder, alcoholism; drugs, either classified as over-the-counter or "controlled substances" involve disorders ranging from addictions to the side effects produced by merely introducing a foreign substance into the body, including supplemental hormones. All such substances will effect the body's and mind's response to stress and infection, and they will delay the healing process by altering the normal biochemical balance of the body, resulting in stress-related disorders and diseases.

The stress of male occupations has been researched to a greater depth than has the stress experienced by working women in

nontraditional (male dominated) or traditional female occupations. The housewife/mother and/or working woman is subjected to the stressors of noise, interruptions and distractions, both at home and at work, on a daily basis. Selye (1976b) has also included those studies which analyze the stressor effects of sensory deprivation, boredom and monotony which can be experienced either at home or on the job. "Deprivation stress" was related to inactivity and the extreme effort to adapt and compensate for the lack of an outlet for pent-up energy. Perceptual isolation was found to produce "loss of orientation, difficulties in direct thinking, anxiety from personal somatic discomfort" leading to "a mounting stress reaction in most subjects" (Selye, 1976, p. 240). Most reports of women in traditionally male dominated occupations have shown that women seem to be coping better with the success oriented stressors of traditionally male professions, in that they are not succumbing to the stress-related diseases and disorders typically found among their male counterparts (Tung, 1980). How long can this trend endure? Friedan (1981) formulated the question in these terms: "Are men and women moving in opposite directions, chasing illusions of liberation by simply reversing roles that the other sex has already found imprisoning?" (p. 38).

Many stressful enviromental conditions are related to the location of one's residence and business. City dwellers typically

experience more stressors than those residing in suburban or rural areas. The typical stressors of city living include high crime rates, pollution, noise, crowding, drug traffic, juvenile gangs, and even graffiti (Selye, 1976b). The rising rates of crimes against persons in every area, urban, suburban and rural, exacerbates realistic anxiety and fear to the point of paranoia, and common-sense caution turns to preoccupation, which is very disruptive to any life style (personal observations and experience, 1983).

Pollution through chemical agents, microbes, sound and overcrowding are potent stressors, but data on their nonspecificity are limited (Selye, 1976b). Nonetheless, in reference to crowding, it has been found that under certain circumstances it can produce stress-related disorders such as hyperactivity, peptic ulcers and sensitivity to infections. Interestingly, "a population study on human behavior under crowded conditions suggests that ... women tend to be more cooperative, and lenient and like each other more" (Selye, 1976b, p. 258).

Another source of daily stress associated with occupation and location is travel, especially that involving driving substantial distance to and from work. For city workers, living out in the surrounding suburban areas and driving to and from work, especially in high speed, heavy traffic, produces anxiety,

physical discomfort of maintaining the same position and boredom, and, depending on the vehicle, it can subject the driver to the potent stressors of vibration and noise. These conditions have been found to produce "increased corticoid and catecholamine production, psychologic signs of nervous tension, or exhaustion, elevated blood pressure, tacycardia and sweating" (Selye, 1976b, p. 333).

Also related to location is weather. Studies of people living under various meteorologic conditions have shown that some people are "weather-sensitive and can react with an 'irritation syndrome' (ascribed to 5-HT overproduction), various types of hyperthyroidism or an 'adrenal exhaustion syndrome' attributed to catecholamine deficiency" (Selye, 1976b, p. 301).

The traditional social, family and marriage structures have changed, but whatever life-style a woman chooses to live she will still find herself in conflict with societal standards. As stated previously, marriage seems to provide solace for men and aggravates internal role conflicts for women, thus producing stress (Kinzer, 1979); on the other hand, there still exists a considerable amount of stigma attached to being a single woman. "Living together" has become more acceptable, outwardly, but still produces internal conflicts for women. Being single can be unhealthy if it causes a person to be socially isolated

(Editorial, 1977; Kinzer, 1979; LeShan, 1966) in contrast to being married or having friends. Studies suggest that there is a definite difference between the stress effects of perceptual isolation and those effects of social isolation (Selye, 1976b).

The degree of a person's religious beliefs can affect their reaction to stressors. This effect is moderated by the concept of locus of control (Rotter, 1966). Persons who believe in superior beings, an external locus of control over their environment, tend to react poorly to stressors; whereas, those who believe they have some control over their lives, an internal locus of control, generally cope with stressors well. Most women tend to fall somewhere between perceived external and internal locus. "In any event, there appears to be a consensus that severe social and cultural stress predisposes to a number of maladies, not only to typical psychosomatic diseases, but even to infections, by decreasing resistance" (Selye, 1976, p. 249).

Fitness of mind and body influence a person's perception of and adaptation to stressors. As Morse and Furst stated, "being prepared helps insure successful coping" (1982, p. 35). Many regular exercise programs have become popular with women, and although muscular exercise may improve adaptation to physical stress and serve as an indicator of stress tolerance and reduce psychological stress effects, it can, when it is of sufficient

intensity and duration, elicit all the characteristic manifestations of the stress response (Selye, 1976b). The most typical stressor action of athletic exercises are changes in adaptive hormones such as epinephrine and norepinephrine (Selye, 1976b, p. 192). "The ability of muscular work to produce a discharge of catecholamines, ACTH and glucocorticoids, as well as the metabolic consequences of normal hormonal responses, have been extensively described" (Selye, 1976b, p. 177).

Mental preparation is important in building a positive self-image and self-confidence in dealing with the stressors of an independent life-style and/or, of returning to careers interrupted by having families; or in starting careers after children have grown and left home. The latter two are evident by the increasing numbers of women returning to college (Morse & Furst, 1982, p. 35). As with maintaining physical fitness (exercise), mental exertion not only conditions the mind, but produces stress as well, in an immediate sense. Studies have shown that both cardiac rhythm and urinary catecholamine excretion increase (in men) under the influence of intense mental work (Selye, 1976b). "The performance of arithmetic tasks has also been shown to cause elevated levels of plasma corticoids, FFA, and blood pressure, as well as changes in blood electrolytes, proteins and cholesterol" (Selye, 1976b, p. 236).

The standards employed to measure emotional stability in women have always been different than those used for men. Crying has been an acceptable and even expected pattern of emotional behavior for women when confronted with stressful situations, but the advent of more women into professions and businesses has produced more positive methods of coping, as opposed to negative "tightening up" and "holding in" methods that produce ulcers, heart attacks and strokes in men. Some of the positive methods being used as provided by Morse and Furst (1982) are: "being calm in the face of adversity; smiling instead of frowning or crying; tempering criticism with praise; and ..., thinking before acting" (p. 35).

The last conditioning factor discussed by Morse and Furst (1982) was relaxation. If individuals learn how to relax and use those methods under stress, they can prevent some, if not all, deleterious results of stress.

Selye (1976b) also cataloged additional environmental sources of stress found in other studies. Two separate studies revealed that light rays (red light or strong light) as compared to normal light rays, decreased working ability and "in women strong light raises urinary catecholamines excretion" (p. 142); "exposure to strong vibrations can act as a powerful stressor" (p. 143); and "temperature, induced endocrine changes very similar to those elicited by other stressors" (p. 96).

CHAPTER 3

PHYSIOLOGICAL AND PSYCHOLOGICAL RESPONSES TO STRESSORS

Physiological responses to stress commence as the hypothalamus is alerted, through a presently unidentified mechanism when the body is activated by a stressor (Morse & Furst, 1979; Skinner, 1980). Selye (1976b) referred to this mechanism as the first mediator, and suggested that it could be a nervous impulse, perhaps resulting from the presence or lack of an essential metabolic chemical. To Selye the action upon the hypothalamus appeared to be regulated by nervous stimuli from the cerebral cortex, the reticular formation and the limbic system, especially the hippocampus and amygdala. When the stimuli reached certain neuroendocrine cells, the cells transformed neural signals into blood borne hormonal signals. The two primary systems activated by the hypothalamus are they hypothalamus-anterior pituitary-adrenal cortex axis resulting in the release of cortisone and other compounds, and the sympathetic division of the autonomic nervous system and the adrenal medulla resulting in the release of catecholamines, adrenaline (epinephrine) and noradrenaline (norepinephrine). The release of the hormones from both primary systems will inhibit all unnecessary functions of the body during stressful situations. The results of these hormonal releases are as follow: decreases in blood glucose, heart rate, and blood pressure; transfer of blood from noncritical muscle

areas (gut) to the heart and skeletal muscles; partial contraction of muscles and activation of related neural fibers; increased excretion by sweat glands; dilation of pupils; sense organs become highly sensitive; saliva secretion is decreased; peripheral blood flow (to the skin) is restricted; blood coagulation time is decreased; the inflammatory response is terminated via cortisone deactivation of the thymus gland and lymph nodes; the functions of polymorphonuclear leucocytes (defensive cells), lymphocytes and macrophages are inhibited, and finally pain is inhibited. Inhibition of pain may be related to the release of adrenocorticotropic hormone (ACTH) and morphinelike substances called endorphins, experimentally shown to block pain. Another hormone released during stress is thyroxine from the thyroid; it increases the body's metabolism which in turn maintains a state of preparedness. The parasympathetic division of the autonomic system becomes involved if the response is severe enough. The action of acetylcholine liberates catecholamines (Selye, 1976b). When the stress response is severe and the reactions of the sympathetic system become excessive, the parasympathetic system is activated to inhibit the SNS, and in some individuals it becomes dominant and may result in "a very slow heart rate, low blood pressure, shallow breathing, low blood sugar, nausea, dizziness and fainting" (Morse & Furst, 1982, p. 41). Although the stress response is normal and necessary, it is often triggered by

self-induced psychological stressors, such as anger, anxiety and frustration, which, when they become repetitive and chronic, result in bodily damage (Morse & Furst, 1982).

Selye (1952, 1976a, 1976b, 1977) divided the stress response into three stages and stated that its triphasic nature was an indication that the body's adaptability to stress was finite. The initial stage is an acute phase called the alarm reaction which represents a decline in general resistance, or a somatic expression of the body's defenses. The body then begins to adapt and produce responses opposite to those found in the alarm reaction. This stage, in which adaptation is acquired, is the stage of resistance. This is the stage in which the adaptation energy is finite, because under prolonged exposure to a stressor this stage can be sustained for only a limited period of time. When all of the adaptation energy has been expended the body moves into the third stage, exhaustion, in which the body's resistance drops below normal, and tissue damage occurs. These three stages of the stress response have been termed the "General Adaptation Syndrome" by Selye.

There are three types or responses to stress (Morse & Furst, 1979). The response that results in the maintenance of homeostatis is "neustress." The stress response which is deleterious and potentially disease producing is distress, such as anxiety and frustration. The response which is beneficial and

improves physical and mental functioning is eustress, such as regular exercise.

Current studies on stress and endocrine responses are being conducted in many areas of science. The research of Roth, Mefford and Barchas (1982) on regional brain amines as related to acute and chronic stress has yielded several interesting findings. Repeated stress showed a marked decline in turnover and an increase in absolute level of hypothalamic transmitters, epinephrine and norepinephrine. Chronic repeated stress also produced increases in hippocampal norepinephrine concentrations and decreased turnover. These results are of particular interest, since these amines have been implicated in the control of ACTH release. Acute stress was found to increase levels of dopamine metabolites, homovanillic acid (HVA) and dehydroxyphenylacetic acid (DOPAC), in the hypothalamus and brain stem, while dopamine concentrations were unaffected. These findings indicate that acute stress can increase dopamine turnover. Reinhard, Bannon and Roth (1982) found that mild stress did not alter the synthesis and metabolism of either serotonin nor noradrenaline (norepinephrine). Mills and Marks (1982) measured human endocrine responses to acceleration stress. Acceleration was considered ideal as a controlled environmental stressor for investigation of human neuroendocrine responses to stress. Contrary to previous evidence, they found that neither growth hormone (GH) nor

prolactin (PRL) showed significant level changes. The serum cortisol level, however, did appear to be a good indicator of gravitational stress. In addition, "the timing of the peak cortisol response is suggestive of activation of the pituitary-adrenal axis" (Mills & Marks, 1982, p. 538). Manelli, et al., (1982) found that under anesthesia only peripheral levels of norepinephrine rose significantly, suggesting an activation of the sympathetic nervous system, while levels of epinephrine did not change. They "concluded that the human adrenal medulla can selectively release epinephrine without concomitant release of significant amounts of norepinephrine" (p. 94). They also confirmed dopamine secretion by the adrenal medulla and demonstrated that it responds to surgical stress.

Psychological changes due to stress have their basis in physiological changes, and an individual's subjective perceptions of events. All psychological symptoms and signs of stress are related to the release of stress hormones. As an example, catecholamine action will result in excessive nervous sweating and vasoconstriction, resulting in a pale appearance of the skin (Goodman & Gilman, 1975).

CHAPTER 4

STRESS-RELATED DISEASES

Characteristic manifestations of stress involve biochemical changes, morphological changes and functional changes which are precursors to diseases of adaptation. Data compiled and cataloged by Selye (1976b) includes such manifestations.

Changes in body weight are affected by stress-induced changes in appetite, due to changes in biochemical levels in the body. Stress produces pronounced changes in plasma levels of insulin; the plasma levels of glucagon is regularly raised by various stressors; catecholamine discharge is an initial response to stress exposure; epinephrine and norepinephrine levels are not necessarily parallel and can be associated with plasma insulin levels, and they vary with exposure to everyday stressors; serotonin can be decreased indirectly by the stress depletion of vitamin precursors; prostaglandins are increased during stress, and these play a pathogenic role in the development of peptic ulcers; also "virtually every acute stressor produces a pronounced depletion of cholesterol stores in the adrenal and an increase in plasma cholesterol, usually associated with similar changes in Vit C levels" (Selye, 1976b, p. 527); rises in triglycerides and lipoprotein are accepted as characteristic manifestations of stress; finally, stress influences virtually every hormone which regulates carbohydrate metabolism and can induce transient

hyperglycemia and also elicit hypoglycemia.

Morphological changes involve stress-induced changes in the structures of the various organs affected (Selye, 1976b). The thyroid changes are difficult to interpret, because stress can increase or decrease PBI (protein bound iodine) intake which depends on conditioning factors. Reproductive organs are affected in various ways by stress. Chronic stress "induces menstrual disturbances in women ... retards onset of puberty, diminishes fertility and may interfere with maintenance of gestation or lead to malformation of the embryos" (Selye, 1976b, p. 600); during lactation, stress diminishes milk secretion. Research on the stressor effects on blood cells and blood volume revealed that "a variety of stressors produce 'stress polycythemia' manifested by a normal erythocyte mass but a high hematrocit reading, secondary to contracted plasma volume" (Selye, 1976b, p. 614). The effect is associated with hypertension, in which blood volume itself affects the number of cells and the inner makeup of the cells. Stress effects on the cardiovascular system are among the earliest manifestations of the emergency reaction. Among the most characteristic mainfestations of stress, involving the gastrointestinal system, are acute hemorrhagic erosions of the gastric and intestinal mucosa. The resulting ulcers are usually superficial and localized in what has been termed the "stress

triad" (Selye, 1976b, p. 624), which includes the stomach, duodenum, and upper small intestine. The stress of muscular exercise on the ocular structures may increase intraocular pressure which is associated with biochemical changes in the eye, particularly altered enzyme activities. Acute stress upon the kidney reportedly can result in renal enlargement and tubular proliferation, whereas chronic stress diminishes the size of the kidney. Severe stress can seriously and irreparably damage the liver. Severe stress can diminish liver weight and can also result in congestion or edema, centrilobular necrosis, fatty degeneration, loss of glycogen, the appearance of "plant-like cells", "ballooning" of hepatcytes, PAS-positive (periodic acid Schiff) hyaline droplets and "toxic hepatitis." Among the most striking morphologic effects of stress is its ability to inflame and degenerate connective tissue, retard healing and regeneration of tissue.

Functional changes elicited by stress are reflected in the abnormal systemic performance or responses of bodily systems (Selye, 1976b). Stress produces change in brain activity as measured via the EEG; in addition many neuropsychological changes occur during stress. It has been reported that chronic and severe stress can result in a decline in ability to perform any task; severe stress impairs learning ability; psychogenic stress impairs

memory. Stress-induced emotions, such as fear, frustration and aggression can result in loss of goal orientation, severe depression, development of special hates or, in general, irritability and intolerance; severe emotional arousal can cause a loss of appetite and excessive cravings and influence the use of drugs and alcohol; stress, by influencing performance and interfering with the ability to concentrate, may result in accident proneness. In addition, stress interferes with the regulation of body temperature. The cardiovascular system reflects stress effects through a rise in blood pressure and pulse rate. Throughout the muscular system, depending on location, stress can initiate bruxism, hyperkinesia, violent gesticulation and even painful muscular cramps. Stress can enhance blood coagulation, a factor in stress-induced coronary thrombosis; stress has also been implicated in increased fibrinolytic activity in human blood following muscular exercise, emotional arousal or exposure to heat. Stress definitely plays a role in the immunologic capabilities of the body by effecting suppressor T-cell activity.

During acute episodes of stress it appears that the primary hormones released are epinephrine and norepinephrine. In situations of chronic stress the major hormone released is cortisone. An explanation of the nonspecificity of the resulting

symptoms or diseases, from the same or similar stressors, in various individuals is based on individual inherent weaknesses or predispositions in specific organs or body sites, (this is the "weak organ" theory) (Selye, 1976a). The locus of the stressor effect is also dependent on which autonomic nervous system predominates the stress response (Martinson & Anderson, 1979; Wolf & Goodell, 1968).

Stress-related symptoms and disease are multi-variable, therefore this review will primarily address those major stress-related diseases which affect women.

Until the present, the incidence of cardiovascular diseases among women has been much lower than among men. The increasing incidence among women has partially been attributed to the increase of the Type A, coronary-prone behavior pattern among women. A study by Waldron, Zyzanski, Shekelle, Jenkins and Tannenbaum (1977) has shown that for employed women the maximum Type A scores were observed at ages 30-35, and that a higher educational status was associated with higher Type A scores. Both findings could be associated with age risk, and psychological and social stressors involved with gainful employment and multiple roll conflict. The stress-related cardiovascular diseases are coronary heart disease, coronary thrombosis, coronary spasm, myocardial infarction, cardiac arrhythmias, hypertension, and angina pectoris.

Coronary heart disease (CHD), also known as ischemic heart disease or heart attack, is estimated to strike 1.3 million Americans in a single year; of those, approximately 675,000 will die, with 175,000 of those deaths being premature (Glass, 1977). The ratio pattern of male-to-female incidence of both fatal and nonfatal cases, with male incidence predominating, may be changing, as a recent ratio showed the male-to-female incidence to be 1.65 to 1.0 (Anderson, 1973; Margolis, Gillum, Feinleib, Brasch & Fabsitz, 1976; Murphy, 1978). Hurst, Jenkins and Rose (1976) reported that studies suggested that acute or exacerbated chronic anxiety and depression could heighten the onset of CHD.

Most cases of heart attack are found to be precipitated by the narrowing of coronary blood vessels by cholesterol-rich atherosclerotic plaque. The gradual occlusion of vessels greatly increases the risk of a thrombosis forming and in turn, will result in a heart attack, which is termed a coronary thrombosis (Eliot, 1979). Women may have been protected against the development of this cholesterol plaque by naturally occurring estrogen (Colburn & Buonassisi, 1978). Estrogen may stimulate scavenger cells which remove harmful blood fats (Martinson & Anderson, 1979). Cholesterol occurs in the bloodstream in three forms: very low-density lipoproteins (VLDLs); low-density lipoproteins (LDLs) which are the deleterious cholesterols that

develop into plaque; and high-density lipoproteins (HDLs) which seem to help clear coronary blood vessels of VLDL- and LDL-type cholesterol (Harting, Foreyt, Mitchell, Vlasek & Gatto, 1980). Women have a naturally higher level of HDLs than men. Estrogen appears to be a primary factor in stimulating the high levels of HDLs (McGill, Anselmo, Buchanan, & Sheridan, 1980). A clot or thrombosis is an aggregate of blood platelets composed of fibrins. During stress the activation of the sympathetic nervous system causes the release of catecholamines which cause blood platelets to clump and contribute to the development of coronary thrombosis (Leff, 1975). Here, women have another advantage, insomuch as women reportedly produce less of the catecholamines under stress than do men (Collins & Frankenhaeuser, 1978; Johnsson & Post, 1974).

Coronary spasm is a sudden contraction of the coronary arteries which can induce myocardial spasm with subsequent necrosis of the surrounding tissue. Most cases have shown evidence of atherosclerosis and thrombus formation previous to the spasmodic episode and/or death of the individual. It is believed that the spasms may be the result of a sudden release of calcium into the blood vessels. The activation of the SNS primes α-adrenergic receptors in the coronary arteries which results in calcium release and subsequent spasm. Women again may be

protected by producing less of the catecholamines (Collins & Frankenhaeuser, 1978; Johansson & Post, 1974). It has also been shown that low levels of magnesium in the heart are associated with a high incidence of spasm. High levels of magnesium may be protective by preventing an influx of calcium into the blood vessels (Turlopaty & Attura, 1980). Women again have the advantage because they naturally have a higher concentration of magnesium than men (Shaw, 1979).

Myocardial infarction is the death of the heart muscle, which occurs beyond the point of a coronary artery blockage; it is related to atherosclerosis, thrombosis or spasm (Eliot, 1979). The sudden release of catecholamines during stress can rupture myocardial fibers which result in death even in an individual with healthy coronary tissue. Women may be protected somewhat by lower catecholamine production (Collins & Frankenhaeuser, 1978; Johannson & Post, 1974), and it has been suggested that estrogen has a direct effect on the atrial myocytes where its protective action may be mediated (Stumpf, Sar & Aumuller, 1977). Investigations of the amount of life-change over six-month periods between groups with no illness prior to MI and groups with illness prior to MI showed that the latter had twice the total amount of life-changes than the former (Hurst, Jenkins & Rose, 1976).

Cardiac arrhythmias are abnormal heart rhythms, of which there are two types, atrial and ventricular. The latter is the

more serious of the two and can cause sudden death. It has been shown that emotional stress-inducing factors may induce ventricular arrhythmias, through massive catecholamine release by activation of the SNS (Donlon, Meadow & Amsterdam, 1979; Natelson & Cagin, 1979).

The "Number One" risk factor for coronary heart disease and cerebral stroke is hypertension (Eliot, 1979; Morse & Furst, 1979). Several recent studies have shown that psychological stressors cause sustained elevations in blood pressure. Those stressors which caused the highest increases were frustration and anxiety, and are stressors that many women are particularly prone to. Catecholamines are instrumental, here too, in inducing hypertension. As before, women, by producing less catecholamines under stress, consequently have lesser increases in blood pressure (Collins, 1978; Johannson & Post, 1974). Estrogen also seems to be protective in reducing the occurrence of hypertension in females (Stumpf, Sar & Aumuller, 1977).

Angina pectoris is a cardiovascular condition in which there is partial occlusion of the coronary arteries. The occlusions deplete the oxygen supply to surrounding heart muscle. The occlusion may be associated with atherosclerotic plaque or it can be intensified by spasms (Neill, Wharton, Fluri-Lundeen & cohen, 1980). Angina or heart pain may often precede a heart attack or

may follow it. Though women have a lower incidence of heart attack than men, they are equally affected by angina.

Although women are protected by estrogen, there are environmental factors which place them at greater risk of heart attack and death. The risk factors affecting women include: sodium intake (salt) (Weinsler, 1976), which causes the body to retain fluid which increases the blood volume which in turn increases blood pressure; race, not only for genetic differences, but as related to social and family factors as well (Jenkins, Tuthill, Tannenbaum & Kirby, 1979); cigarette smoking, which negatively increases flow of adrenaline, accelerates heart rate, constricts blood vessels, increases the tendency for blood to clot, elevates blood levels of fatty acids and LDLs, and produces carbon monoxide which binds to hemoglobin cites normally meant to be used by oxygen (Theorell, 1979). Further, VLDL- and LDL-type serum fats increase risk, obesity increases the risk of hypertension and heart attacks, diabetes increases the risk of heart attack, and aerobic exercise appears to lower the probability of heart attack (Cooper, 1977). As mentioned earlier, psychological stress is capable of inducing cardiovascular diseases: coffee drinking, alcohol intake and sugar ingestion in high quantities can increase the risk of heart attack (Connor & Connor, 1972; Jick, et al., 1973). The use of oral contraceptives

containing estrogen increases the risk of heart attack (Dugdale & Masi, 1971; Mann & Inman, 1975; Mann, Vassey, Thorodood & Doll, 1975); and age is relative with regard to women in that, protective, naturally occurring estrogen levels dramatically decrease from the time of menopause onward, which is when women become just as susceptible as men to the development of cardiovascular diseases (Higano, Robinson & Cohen, 1963). Hurst, Jenkins and Rose (1976, p. 305) concluded from a person specific or environmentally specific adjustment study, that "systemic emotional arousal engendered by events relevant to the individual, or in which the individual is engaged/involved, may constitute the most important aspect of psychological stress in the onset of heart disease".

Cerebral vascular accidents, or cerebral stroke, have causes similar to those relative to cardiovascular disease. These are also more common in men than women (Morse & Furst, 1979).

Evidence indicates that the onset of cancer is often preceded by severe life-change events, as well as chronic psychological stressors (Holden, 1978). Most patients report anxiety, depression, hopelessness and grief prior to the appearance of the tumors (Hurst, Jenkins & Rose, 1976). "It has been hypothesized that the stress activation of the H-AP-AC system with release of

cortisone can inhibit the activity of macrophages and lymphocytes. If these defensive cells are prevented from acting, tumor cells could multiply and form a cancerous lesion" (Morse & Furst, 1982, p. 59). The major female cancers are those afflicting the breast and female genital tract. Studies have reported that women who repress feelings, especially anger, have a higher probability of developing breast malignancies rather than benign breast tumors (Greer & Morris, 1975; Holden, 1978; Pettingale, Greer & Tee, 1977). It has also been reported that the loss of a loved one, habitual use of denial, and depression often precede the onset of breast cancer (Greer & Morris, 1975). In another study, women who retrospectively reported recent emotional loss and feelings of "hopelessness" showed a significantly higher occurrence of cervical cancer than their counterparts who did not experience those feelings (Holden, 1978). Lung cancer is increasing among women, but not proportionately to the increased smoking habits of women, which seem to be related to the way they tend to smoke and the reasons for smoking (Murphy, 1978). It also appears that women tend to have greater resistance than men to lung cancer (Waldron, 1976).

Muscle-related conditions are associated with physiological and psychological stressors. The chronic psychological stressors involved are anger, anxiety, worry and frustration (Morse & Furst,

1979). Depending on the locus of the response, it can manifest into headaches, oral conditions, shoulder and neck pain, and backache. The major types of stress-related headaches are migraine and tension. Migraine sufferers do not necessarily have the "migraine personality" mentioned previously (Cohen, Rickles & McArthur, 1978; Kudrow, 1978; Ziegler, 1979). Studies have shown that sufferers of both major types of headache have similar patterns of high anxiety, depression, hysteria and obsessive-compulsion (Ziegler, 1979). Migraine is, without question, stress-related, and affects mostly women (Friedman, 1979; Kudrow, 1978). Migraine attacks often occur when an individual is relaxing, but anxiety-producing situations also initiate onset. Other migraine-related factors affecting women are: changing of natural estrogen levels in the menstrual cycle, especially occurring as a symptom of premenstrual syndrome; these can occur as a side effect of the use of extrinsic estrogen as replacement therapy during menopause, and with the use of oral contraceptives (Kudrow, 1978). Ingestion of alcohol and chocolate can precipitate an attack. Migraine has been shown to have a genetic component (Morse & Furst, 1982).

As with migraine, tension headaches tend to strike women most commonly and are frequently preceded by an anxiety-producing situation (Friedman, 1979). The tension headache does not appear

to have a genetic component. The mechanisms by which the two types of headaches occur are opposite. Vasodilatation occurs with migraines and vasoconstriction occurs with tension headaches (Friedman, 1979).

The stress-related oral conditions (Morse & Furst, 1981) include clenching, bruxism and myofascial pain-dysfunction syndrome (MFPDS). Clenching and bruxism both involve prolonged, intense contact of opposing teeth, but differ in that bruxism also involves a grinding motion and clenching does not. Both are considered to be a response to physical and psychological stressors including anxiety, frustration, latent aggression, hostility, dependency and psychiatric problems. MFPDS often occurs as a result of several severe psychological stressors acting in conjunction with one another, such as anger, anxiety, illness, death of a loved one, and marital, work-related or financial problems. Afflicted individuals are often depressed and have histories of gastrointestinal diseases. Clenching and bruxism are found to be associated with the occurrence of MFPDS or act as a precursor. A university dental school study found that typical women patients were highly "disciplined" (Editorial, 1976).

Shoulderaches and neck pains caused by partial muscle contraction are elicited by chronic psychological stressors, as

are backaches (Norris, 1977). Those persons who develop backaches tend to be angry, resentful, competitive and apprehensive (McQuade & Aikman, 1974). Evidence indicates that individuals with low back pain have suffered severe life-stress events such as death of a loved one, marital separation or divorce (Leavitt, Garron & Bieliauskas, 1979; Nagi, Riley & Newby, 1973).

There are various kinds of stress-related ulcers. Duodenal ulcers are four times as common as other peptic ulcers (Menguy, 1980). The actual factors which precede the onset are not known. Not all "ulcer personality" individuals get ulcers, nor do all ulcer patients have "ulcer personality" characteristics (Weiner, 1977). Stress is an important undisputed factor in the development of peptic ulcers (Leff, 1975; Selye, 1976a). It has been observed that the incidence of these ulcers is higher under intermittent situations of stress as opposed to continuing stress; thus, decision-making is associated with ulcer development (Seligman, 1968). The anxiety reactions such as agitation, quick temper, sleeplessness and loss of appetite, experienced with making a vital decision, have been found in conjunction with marked changes in heart rate, finger-pulse amplitude and galavanic skin response. Decisional conflict has two sources of psychological stress: (1) the decision-maker experiences anxiety about potential material and social losses he or she may suffer as

a result of the decision and; (2) the decision-maker's reputation, self-esteem and competence in ability to make decisions are at stake (Janis & Mann, 1977). Men have predominated this category of stress-related diseases, but women are beginning to "catch up", possibly as a result of their entry into higher employment levels and/or more stressful occupations (Pflanz, 1978).

There is evidence that stress plays a role in intensifying diabetic symptoms, or induce diabetic crisis or convert prediabetic cases into clinical diabetes (Morse, 1974; Petrich & Holmes, 1977). These can occur through the stress elicited release of cortisone and catecholamines, which increases the blood glucose level. At this time, there is a slightly higher mortality rate among female diabetics than male diabetics (Pedersen, Beck-Nielsen & Heding, 1980).

Rheumatoid arthritis, the predominate arthritic disease, is believed to be an autoimmune, degenerative, chronic disease, and stress is a factor related to the onset of the disease (Beeson, McDermott & Wyngaarden, 1979). It is known that rheumatoid arthritis is rapidly becoming a woman's disease. Recent statistics show that four out of five sufferers are women (Beeson, McDermott & Wyngaarden, 1979).

Ulcerative colitis, a chronic inflammatory disease of the mucosa lining of the colon, certainly seems to be acutely

exacerbated by stress. It has been observed that the disease gets worse with the presence of anxiety, conflict and stressful situations related to occupation and family. Figures show that this disease is more prevalent among women (Beeson, McDermott, Wyngaarden, 1979; Gilat & Rozen, 1979; Grace, Wolf & Wolf, 1951).

Two conditions which are nondisease related and are stress-induced are chronic diarrhea or "irritable bowel syndrome" (Beeson, McDermott, Wyngaarden, 1979), and constipation. Individuals with the former tend to be angry, hostile, and filled with guilt feelings, and they have a tendency toward panic (McQuade & Aikman, 1974). Those who suffer the latter condition are described as bored, prim, dejected and depressed (McQuade & Aikman, 1974)

Raynaud's disease, which is overwhelmingly a woman's disease, afflicting the fingers and toes, is characterized by ischemia that is induced by cold or stress. That which is induced by stress appears to be the result of excessive SNS activity (Beeson, McDermott & Wyngaarden, 1979).

Stress is also a factor in the development of thrombophlebitis, an inflammatory condition of the veins which predisposes them toward blood clots (Beeson, McDermott & Wyngaarden, 1979). The formation of the clots during stress may be related to catecholamine release, which activates blood

platelets causing them to aggregate. The incidence is higher among females who use oral contraceptives (Editorial, 1980).

Of the stress-related allergic diseases, asthma is the most prevalent and the most serious. Attacks can be precipitated by emotional reactions; therefore stress is a definite factor (Beeson, McDermott & Wyngaarden, 1979). Most other stress-related diseases are precipitated by the action of the SNS, but asthma is precipitated by the PNS and released acetylcholine. Other stress-related allergic diseases are chronic urticaria, angioneurotic edema, allergic rhinitis and vasomotor rhinitis (Morse & Furst, 1982).

Grave's disease, hyperthyroidism, may appear to be an autoimmune disease, but is related to emotional trauma and therefore is possibly stress-induced. Thyroxine levels have been found to be markedly increased following severe psychological stressors and life-stress events (Petrich & Holmes, 1977; Selye, 1976a). The incidence of hyperthyroidism is predominated by adult women, five to one, over men (Beeson, McDermott & Wyngaarden, 1979).

Stress impairs an individual's immune and inflammatory responses through the release of cortisone and catecholamines, which, in turn, could permit infectious pathogens to penetrate the body's primary outer defenses and multiply with little or no

resistance. Although women have a higher reported incidence of infectious diseases than men, they have less severe complications (Mechanic, 1978; Roskies, 1978). There is evidence that estrogen binds to a defensive white blood cell (PMNs) and stimulates the cells microbe-destroying activity, which may be why women manage infectious diseases better than men (Klebanoff, 1979).

An infectious disease in which stress is especially relevant is tuberculosis. It is known that many persons whom have been exposed to tuberculosis do not develop the infectious manifestations of the disease. These persons tend to have a high resistance to the disease, which under stressful conditions can break down, allowing the subclinical tuberculosis to become active. Stress influences this conversion through the release of cortisone, which in turn inactivates the microbe-destroying function of the phagocytes which normally keep tubercle bacilli under control (Beeson, McDermott & wyngaarden, 1979; Petrich & Holmes, 1977).

The effect of stress upon the body's resistance is definitely a factor in the active manifestations of viruses such as acute coryza, influenza, and infectious mononucleosis. It is not only the impairment of the immune response through the release of cortisone, but also activation of viruses through the release of cortisone and catecholamines (Gruchow, 1979; Mason, Buescher, Belfer, Artenstein & Mougey, 1979).

The types of hypoglycemia which are stress-related, where there are no diseased organs involved, are spontaneous or functional hypoglycemia. Hypoglycemia is a condition, opposite to diabetes, in which insulin is overproduced and carries an excess of glucose out of the blood and into the cells of the body. Hypoglycemia can develop into diabetes if the pancreatic cells which produce insulin continue to overwork and then "burn out". The action of stress hormones results in an excessive release of glucose into the blood, which then activates the insulin, but the activity of the insulin becomes too effective, resulting in low blood sugar (Beeson, McDermott & Wyngaarden, 1979).

There are two types of kidney diseases which are stress-related: urinary tract inflammation and enuresis. Psychological factors play an important role in both diseases. Some investigations have reported a particular set of personality traits in women related to urinary tract inflammation, though the disorder can be caused by infection and trauma (Chertok, Bourguignon, Guillon & Aboulker, 1977). Enuresis is primarily found among juvenile males and is almost always psychological in origin.

Since the etiology of atypical facial neuralgia is unknown, it is considered to be a psychologically induced stress-related disease (Morse, 1974), which has a high female incidence

especially among perimenopausal and postmenopausal women (Morse & Furst, 1982).

There are two relatively rare adrenal-cortical disorders which alter an individual's ability to cope with stress (Beeson, McDermott & Wyngaarden, 1979). The adrenal cortex is the source of the production of the major stress hormones, cortisone and catecholamines. Addison's disease is a malformation of the adrenal cortex in which there is little or no production of cortisone. People with this disease have a poor ability to cope with stress and must receive cortisone supplements. Cushings' syndrome, a dysfunction of the adrenal cortex, results in an overproduction of cortisone. These patients exhibit difficulty responding positively to stress, impaired immune responses and often severe mood swings.

Gout, though a hereditary disease, is stress-related, in that uric acid becomes elevated under certain stressful conditions. Acute attacks are precipitated by alcohol consumption, overeating, physical trauma and emotional stress (Rahe, Ryman & Biersner, 1976; Selye, 1976a).

The skin and hair conditions that are stress-related include neurodermitis, wrinkled skin, alopecia, graying or whitening of hair, dandruff and warts. Hair and skin conditions can be related to stress-induced decrease in surface blood circulation and

therefore an insufficient oxygen supply (Goodman, 1980). Although warts are caused by the papova virus, anxiety-producing situations enhance multiplication of the viruses (Morse & Furst, 1979).

There are also stress-related diseases and conditions affecting the mouth area. Apthous lesions and herpetic lesions often appear after highly emotional periods which trigger a rapid release of cortisone and impair immune responses, allowing related viruses to produce lesions (Morse & Furst, 1981). Necrotizing ulcerative gingivitis is the periodental disease most closely related to stress. It has been shown that social and psychological stressors can result in hypoxia in the gingival tissue; this causes the degenerative changes which result in periodontal disease (Manhold, 1979). Decreased salivation as a stress response increases dental caries. By decreasing saliva volume, the protective antimicrobial substances contained therein are also reduced. There are other miscellaneous stress-related oral conditions (Morse & Furst, 1979, 1981). Tics or muscular twitches appear to be anxiety-induced. Anxiety, fear, and worry can precipitate particular oral habits, such as thumbsucking, tongue thrusting, and nail-, lip-, and cheek-biting. Psychological stressors can also alter the sense of taste, and depression can manifest itself in oral conditions such as burning- and painful-tongue. Vague oral pain and parasthesia have also been attributed to stress.

Sexually related disorders which are stress-induced are generally based in anxiety, worry and depression. The related disorders involving women are oligomenorrhea, dysmenorrhea and premenstrual tension (Beeson, McDermott & Wyngaarden, 1979).

CHAPTER 5

STRESS AND MENTAL ILLNESS

Depression is a stress-related disease and is a key factor in other stress-related diseases and disorders. Depression is a disorder that ranges from prolonged sadness to severe manic-depression psychosis (Morse & Furst, 1982). The majority of reported depressive cases falls between the two extremes, which include two major types, reactive and endogenous (Paykell, 1976). Reactive depression is precipitated by life-stress events (Rahe, 1979). In a study comparing life-stress events by Schless, Teichman, Mendels and DiGiacomo (1977) it was shown that a group of psychiatric patients reported significantly more life-stress events in the twelve months preceding hospitalization than did a group of medical-surgical patients, who in turn reported more events than the subjects from the community. The psychiatric patients also reported a greater frequency of events of an interpersonal nature. Endogenous depression occurs without any definitive overt stressors and is the more severe type (Arieti, 1979). It borders on psychosis and is associated with a deficiency of released norepinephrine at the CNS synapses and thus is related to an increase in monoamine oxidase (MAO) (Paykell, 1976). Reports show that depression is more prevalent among women than men (Arleti, 1979). Morse and Furst (1982) suggest some of the reasons for this: women internalize feelings, especially

anger; girls have fewer opportunities for independence or separation from their mother than do boys; as adults, women may become more dependent on significant others for support and emotional attachment, and therefore when they lose that person(s) a state of depression occurs; more female cases are reported perhaps because women seek out treatment for physical and psychological symptoms more frequently than men; stereotyped subservient roles breed depression, at home and at work; a woman with multiple roles may feel guilty about leaving her children at home; and there may also be a male bias, since most studies on depression are conducted and reported by men (Flor-Henry, 1978; Gove, 1978; Lewis, 1978; Rosenfield, 1980).

The preponderance for depression in women is neither innate nor perceived, but real and fomented by traditional stereotypic forms of socialization of children by parents and society in general (Griffin, 1981; Kinzer, 1979). Although women are at higher risk of depression during natural or induced endocrine changes, the psychological consequences of social discrimination are ever-present factors which might contribute to clinical depression (Brown, 1980). Disadvantages such as low social status, legal and economic discrimination and internalization of role expectations leading to learned helplessness, dependency on others, chronically low self-esteem, low aspirations, and

ultimately clinical depression" (Weissman & Klerman, 1977, p. 106). Current contributors to depression involve access to new opportunities for women, and the discrepancy between rising expectations and aspirations and the likelihood of fulfilling them. The new lifestyles and role expectation may also precipitate intrapsychic personal conflicts. Stewart and Salt (1981) studied the stress of different lifestyles as they related to varying incidences of depression. The various combinations of marital status and employment status were considered; it was found that the correlation between stress and depression was significant only for the housewives, suggesting that the traditional life styles may increase women's vulnerability to depression.

Morse & Furst (1982) report that studies do show an increased occurrence of life-stress events before the onset of schizophrenia and neuroses (Rahe, 1979), although studies reported by Selye (1976b) showed that stress can precipitate onset in genetically predisposed individuals. Hallucinations can be caused by stress-induced release of epinephrine (Selye, 1976a). Initial manic-depressive episodes are often precipitated by stressors. Toxicomanias result in the distress of having to cope with life situations. Though senile psychosis is related to the dysfunction of the pituitary and/or the hypothalamus, there is no clearcut evidence connecting it with stress (Selye, 1976b). There are also higher incidences of anxiety, phobias and hysteria among women (Flor-Henry, 1978).

CHAPTER 6

STRESS-RELATED DISORDERS

The conditions and situations which can be categorized as stress-related disorders are: alcoholism, caffeinism, drug addiction, excessive smoking, obesity, "chewing", anorexia nervosa, accidents, divorce, "running away", business breakup, and suicide.

Drinking women have gone relatively unnoticed because they are more likely to be "hidden" in the privacy of their homes than are male alcoholics (Kinzer, 1979; Morse & Furst, 1982). Through membership statistics of Alcoholics Anonymous, women are gradually closing in on the male level of incidence. Morse and Furst (1982) have cited some of the recent findings concerning alcoholism which are of particular interest: drinkers with antisocial personalities are usually male (Schuckit & Morrissey, 1979); women who drink tend to have histories of depression (Schuckit & Morrissey, 1979); employed married women generally have higher rates of drinking than employed single women or housewives (Parker, Wolz, Parker & Hartford, 1980); in women only, the higher educational status the greater the volume and frequency of the drinking (Parker, Wolz, Parker & Hartford, 1980); suicide attempts are higher among chronic alcoholic women than among their male counterparts (Schuckit & Morrissey, 1979). The precipitating

stressors have a great deal to do with job satisfaction, quality of home life and multiple role stress (Beckman, 1975; Schucket & Morrissey, 1979).

Caffeine is a common component in many beverages and snacks (and medications) (Manber, 1976). It is commonly known that caffeine, a stimulant, interferes with sleep and increases urination (it acts as a diuretic by pulling essential body water out of the system without supplying a replacement). Recent studies reported increased risks for peptic ulcers, bladder cancer and heart attacks for coffee drinkers (Manber, 1976; Maugh, 1973). Addiction to caffeine, or "caffeinism," requires only several daily cups of coffee (Morse & Furst, 1982, p. 93-94). The symptoms of "caffeinism" are nervousness, irritability, headache, insomnia and dizziness (Morse & Furst, 1979). As with any addiction, abstinence elicits withdrawal symptoms, which in this case are similar to the symptoms of the addiction. A recent study additionally found that increased anxiety and muscle tension are withdrawal symptoms of habitual coffee drinkers (White, Lincoln, Pearce, Reeb & Vaida, 1980). This addiction, like alcoholism, is associated with home and work related pressures.

Smoking, like drinking, is used as a major American stress-relieving mechanism (Morse & Furst, 1978). "Women in general have significantly increased their smoking" (Morse &

Furst, 1982, p. 95). Evidence for this is found in the increased death rate among women from lung cancer and heart attacks (Public Health Service, 1979). The implications of marijuana smoking upon the health of women are not well substantiated.

There are various reasons (or excuses) why an individual initiates the use of a drug (Schuckit & Morrissey, 1979): to fall asleep, to wake up, to lose weight, for pleasure or excitement. In American society the main reason is to control anxiety and depression (McCarthy, 1980). Valium is the favorite, most prescribed and/or over-prescribed drug on the market (Colen, 1980). Men tend to be users of drugs such as heroin, marijuana and cocaine (Kinzer, 1979), whereas women predominately use psychotropic drugs, such as tranquilizers, anti-anxiety drugs, barbituates, anti-depressants and amphetamines (Cooperstock, 1978). Nonworking married women have been identified as the largest group of users of tranquilizers. Temporary working women, regardless of marital status, take fewer tranquilizers and sedatives than does the traditional housewife. This data indicates that marital status may not be a determining variable, but that employment status is an influencing factor (Cooperstock, 1978).

Obesity can have its basis in a variety of factors: oral fixation (Kinzer, 1979; Morse & Furst, 1982), simply eating for

pleasure, or overeating as a negative coping mechanism for stress (relief of anxiety or depression) concomitant with underexercise, social and ethnic factors. "Instead of eating to reduce stress, some individuals will engage in chewing, biting and sucking" (Morse & Furst, 1982, p. 100).

Anorexia nervosa, found predominantly among women, is a condition in which there is a severe weight loss, decrease of appetite and amenorrhea (Bhanji, 1979; Shiner, 1980). Though there are biological factors, such as disturbances of the hypothalamus and a lack of certain hormones and social disturbances related to family traits such as enmeshment, overprotectiveness, rigidity, inability to negotiate conflict and frustration, most investigators consider the condition to be a psychologically stress-induced disease (Shiner, 1980). "Most anorectics are perfectionist 'model' children who try to please everyone" (Morse & Furst, 1982, p. 102).

"Most stress-related accidents are those involving automobiles." (Morse & Furst, 1982, p. 102). Alcohol, drugs and mental preoccupation are the causes of many accidents. Emotional arousal is also a factor in the occurrence of accidents. Of all fatal automobile accidents, 20% involve drivers who have experienced emotional upset within six hours of the accident (McQuade & Aikman, 1974). An accident-prone personality has been

formulated, as previously described. Statistics show that women are involved in no more fatal accidents than are men (Cooperstock, 1978; Waldron, 1976). It is believed that many accidents may be disguised suicides (Kinzer, 1979).

One stress-related disorder in which men and women are equal is divorce (Gove, 1978). "Marital discord can lead to anxiety, frustration, guilt and depression which can culminate in divorce." (Morse & Furst, 1982, p. 103). When a marriage fails, the woman too often bears the weight of the blame (Brandwein, Brown & Fox, 1976). The single parent family which is typically headed by a woman has been considered as a "broken" family instead of "normal". The divorced woman and her children are often socially ostracized. A divorced woman who has to work, maintain a household, and be mother and father to the children, often suffers from anxiety and guilt (Gordon, 1979). The divorced woman could develop ambivalent feelings toward men or give them up completely (Gordon, 1979). The accumulation of psychological and social stressors can lead to stress-related diseases (Gordon, 1979; Gove, 1978).

Women have been choosing a formerly male solution to marital stress, "running away", in increasing numbers (Kinzer, 1979). Though society does not approve of the runaway husband, the abandonment is "understandable", whereas For a mother to abandon her family is "unnatural" and deplorable.

Another kind of stress-related separation is the business breakup, which occurs for the same reasons that marriages break up (Bardwick & Donovan, 1971): incompatibility, alcoholism, drug addiction, smoking, unequal workload, and sexual liaisons. Women in business must also deal with the problems relating to expected stereotypical behaviors (Broverman, Vogel, Broverman, Clarkson & Rosenkrantz, 1972). As more women enter the professions the likelihood of a better understanding about behavioral patterns will increase (Baird, 1976).

Suicide is attempted by women more frequently than by men, but men more often succeed (Gove, 1978). Attempted suicide appears to result from a sense of powerlessness and is a reaction to the severity of life-stress events; it is closely related to depression (Paykell, 1976). The highest rates of suicide occur among divorcees, then among widows, then among single women and then married women (Blum, 1977). There are higher rates of suicide for women in particular professions, such as medicine, psychology and chemistry (Kinzer, 1979; Rockmore, 1980). The increased rate of suicide may then be related to the increased incidence of women in employment, especially in nontraditional professions (Blum, 1977).

CHAPTER 7

WOMEN AND STRESS: INFLUENTIAL FACTORS

Developmental Conditioning

As mentioned previously, conditioning plays a primary role in the manner in which we respond to stress. A critical part of this conditioning is the psychosocial experiences of childhood (Barrett & Baruch, 1979). The ideals, beliefs and values with which children are raised will pattern the number of responses available (or deemed socially appropriate) to cope with stress. Though born with the biological advantages for survival, women traditionally are socially disadvantaged. In addition, all children, at a very early age, are taught to delay or deny the gratification of needs; where males can deny the needs of others females must deny their own needs (Weissman & Klerman, 1977). Sex role boundaries are subtly and overtly imprinted upon the child's mind through the daily lives of their parents and other adults which serve as role models.

The socialization by parents, during childhood, of self-images and expectations, are internalized by the child, so that, as in the case of young girls, they come to believe that the stereotypic sex role of femininity is expected, valued, and normative (Weissman & Klerman, 1977). It is possible that self-image/self-esteem is tied more closely to early experiences

and relationships than to current factors (Barnett & Baruch, 1979). Griffin (1981) adds that in adult life maintaining an "image" or false self constitutes a loss of the true self, leading to depression, physical illness and mental illness. The greater the number of images a person attempts to maintain, as in the role behavior of the "superwoman", the more sick a person becomes; this ultimately shortens life expectancy.

The social and psychological factors involved in socialization as reported by Morse and Furst (1982) were fear and anxiety, dependency, aggression, and nurturance and maternal behavior which are all stress-related. A comparison of young girls and boys revealed that the girls reported greater fear and anxiety (Maccoby, 1974), but this could be explained because girls also score higher on dependency measures than boys (Mischel, 1970). Dependence can be helpful in terms of stress management, and help-seeking behavior can be an advantage in coping with stress. However, if young girls are overdependent they cannot cope with stress. Young boys were found to measure higher in verbal and physical aggression, definitely a product of differential socialization (Maccoby, 1974). Girls are patterned to be nonaggressive, while boys learn that aggressive behavior is expected and rewarded. Aggressive behavior is not an advantage in positive stress management. As perhaps an opposite to aggression,

nurturance and maternal behavior is an expected female behavior pattern, perceived by society as innate (Bem & Lenney, 1976). Though consequences of role expectations place women at a higher risk of depression, the traditional nurturing female is less prone to distress than an aggressive male in terms of stress-related diseases (Morse & Furst, 1982). The internalization of these sex role standards motivates an individual to maintain a self image as feminine or masculine by suppressing any behavior considered inappropriate for her or his sex. The suppression of needs and maintenance of a false image limit a sex-typed individual's adaptability (Bem, 1975). It has been found that androgynous individuals of either sex do well in situations requiring both masculine and feminine behavior, because they vary their behavior cross-situationally. Being more adaptable to possible stressful situations allows these individuals to better resist the deleterious results of stress (Bem & Lenney, 1976).

The notion that the biological differences between the sexes inherently has determined the rigid sex roles is a product of Western thought. Margaret Mead's studies of African cultures, as cited by Morse and Furst (1982), have been the most influential in disproving concepts of genetically determined sex roles. Mead's studies found that cultural influences were apparently the major factors in delineation of sex roles. Role behavior found among the Mundugumor tribe, in which aggressive behavior was the rule,

was the same for both sexes. In the Arapesh tribe, both sexes were concerned with nurturing and maternal behavior. The Tchambali tribe trained their children in roles completely opposite to those found in Western societies. The females took control of the tribe as adults and the males devoted themselves to "feminine" activities. Other studies concerning symbiosis and separation between mothers and daughters "have confirmed that daughters who are able to separate early from their mothers can gain confidence in their coping abilities, and as adults are more willing to take chances for valued goals" (Morse & Furst, 1982, p. 134). When young girls become teenagers, biological and psychological changes generate a great deal of confusion and stress. The stress does not only originate at home, but now among peers as well. "There is stress associated with both being beautiful and popular and being unattractive and unpopular" (Morse & Furst, 1982, p. 150). The attractive young woman may spend so much time socializing that she suffers academically. The unpopular young woman may compensate for the distress she suffers by excelling academically. Though more young women go on to universities and aspire for careers, they feel that they must compromise their careers, because they are still under general pressure by society to conform to the feminine model of getting married and being a housewife (Stein & Bailey, 1973). If women compromise their individual ambitions and marry into unequal

relationships they will eventually tend to attach their ambitions to their husbands and children, where their sense of self-worth is based on winning favor in the eyes of their husbands and their usefulness is based on the needs of their children (Stein & Bailey, 1973). This self-image is part of the psychological consequences of an irrational sexual inequality (Miller, 1971).

Marital Status and Stress

Marital status is no longer simply a matter of being just married or single. In addition to traditional marriage or being single, other choices exist: open marriage, living together, singles' societies, multilateral (group) marriage and communes.

Psychologists consider traditional marriage an act of returning to symbiosis for females (Friday, 1978). This transference of dependency to a husband in most instances is a disadvantage for women, for it has been said that marriage is stress producing for women and stress reducing for men (Bernard, 1971). Most of the husbands' previous activities remain unchanged after marriage, whereas women find they have acquired many extra responsibilities that they were unprepared for (Kinzer, 1979). They also find that these new and mundane responsibilities downgrade their educational abilities; therefore for women, more is expected and less is realized (Kinzer, 1979). This is the distress of change (Lopata, 1971). Another source of marital stress for women is the lack of financial control (Williams,

1977). Even though the wife may work, the income is considered "extra", and her power remains relatively insignificant. Women's lack of control over the course of their own lives is very stressful. There is a sexual source of stress in the traditional marriage (Kinzer, 1979). In one regard a married female who premaritally was sexually active may encounter difficulty confining her sexual activities to one partner. On the other hand the married woman, though she believes in ideas of equality between the sexes in many areas, may be opposed to sexual freedom for either partner outside the marriage. The major source of marital stress is the nonremunerative drudgery of being a housewife, which is initially part of the distress of change (Morse & Furst, 1982).

Open marriage is a type of marriage where there should be equal freedom and identity for both partners (O'Neill & O'Neill, 1972). This marriage contract may or may not include freedom of extramarital sex. Ideally, the equality should be reflected in the flexibility of both partners to share chores and financial responsibilities. Each partner should also be allowed time for privacy. Above all, there should be open and honest communication. The concept is still idealistic and problems arise in connection with the extramarital affairs, but it would be advantageous to apply the ideals of equality and communication to traditional marriage.

Living together can include all the divided responsibilities of traditional marriage but without the legal commitment, though the legal responsibilities of the partners at the time of termination of the relationship has recently been challenged in court (Coffin, 1972). The advantages of the relationship for the woman include: retaining her own name and identity; the relationship can be terminated without legal recourse; and, according to current income tax laws, the couple would pay less as unmarrieds. The disadvantages of such a relationship relate to the termination, where the women may receive little or no monetary compensation or emotional support. Another disadvantage is the potential psychological stressors that any children, born from such a relationship, may suffer. Studies have also shown that household responsibilities are usually divided up in the traditional manner. Two other forms of living together are singles' societies and group marriage. Singles' societies are an arrangement in which each person remains single, but live all together in the form of society (Moran, 1972). Studies have shown that in this arrangement, also, role assignment is on the basis of sex. In the multilateral or group marriage arrangement, "there is a marriage of at least three people each of whom is 'married' to at least two other members of the group" (Morse & Furst, 1982, p. 158). The type of commitment shared is considered to be the same as that of the traditional marriage (Constantine & Constantine,

1971). Though studies of these groups have shown men to share in child care and housework, women usually were left to do the least desirable chores. Another group arrangement is communes (Vellsey, 1974). This arrangement is unstable and membership varies. The women are still primarily concerned with responsibilities of traditional roles. Therefore, any form of marriage has its own stressors, some similar and some unique.

In the past if a woman was single, society decided there was something socially unacceptable about her as a woman. Today being single is not socially undesirable, but single women still do not receive the emotional support for choosing that life-style. In some ways, all single women, by choice or by circumstance, are socially isolated. Although it has been found that married individuals enjoy better physical health than the unmarrieds (Ibrahim, 1980), studies have shown that married women accounted for the higher rates of female mental illness; further, each category of single women had lower rates of mental illness than men (Weissman & Klerman, 1977). Gove, as cited by Weissman and Klerman (1977), attributes this finding to the disadvantages of married females, mainly boredom and role restriction concomitant with family size and financial resources. In current times the last two factors may contribute greatly to the amount and intensity of stress that both partners in a marriage must cope with.

Parental Stress

Marriage for women also usually means motherhood, though motherhood is not necessarily preceded by marriage because there are many single women today choosing to become mothers without marriage. Motherhood of course in most cases is preceded by pregnancy. Pregnancy, in itself, can be one of the most stressful periods for a woman (Rising, 1979). Women contemplate motherhood for many right and wrong reasons. Pregnancy is considered to be yet another stage of the symbiotic relationship of women (Kestenberg, 1977). The relationship of the pregnant woman and her mother may increase the stress of pregnancy (Kinzer, 1979). Motherly advice may create overdependency or anxiety (Williams, 1977)

Pregnancy is stressful from the moment it is suspected, especially depending upon the woman's attitude about becoming pregnant (Williams, 1977). Then comes the stress of the helplessness and frustration surrounding morning sickness; stress from illnesses resulting from lowered resistance; distress over increased fatigue, sleepiness and urination; weight gain and loss of figure; painful edema and back pain. Despite all of the stressful physical changes, the mental attitude is usually good; this has been attributed to the high levels of estrogen and progesterone during pregnancy. On the other hand, there are also decreased levels of norepinephrine, which may increase the risk of clinical depression.

Stress during pregnancy can affect the delivery, the mother's health and child's health. The birthing of the child, in itself, can be stressful under the best circumstances. Studies have shown (Crandon, 1979) that a group of women who experienced the greatest amount of social stressors and had the least emotional support, prenatally and during delivery, had about three times the frequency of complications, such as premature labor, postpartum hemorrhage and pre-eclampsia (Newton, Webster, Bence, Maskrey & Phillips, 1979). The total stressor effect of pregnancy can affect women mentally after childbirth. The physical and psychological changes are related to the high incidence of depression after childbirth (Crandon, 1979; Kinzer, 1979). Stress during the pregnancy can contribute or cause deformities, mental retardation and stillborn births (James, 1969). The final stressor related to childbirth is the birthing method. There is a greater amount of stress associated with Cesarian deliveries than with conventional deliveries (Kolata, 1980).

Following the birth of a child, a new set of stressors begin, concomitant with a new life-style for the mother. Breast-feeding can induce stress for reasons of physical discomfort, upsetting and unflexible feeding schedules, anxiety about physical appearance, anxiety about sufficiency of milk for the baby (Williams, 1977), and lack of understanding from the spouse concerning inconvenience (Kinzer, 1979). There are also

disadvantages in choosing not to breast-feed, stemming from the lack of support for making that choice (Williams, 1977). No matter what reason the mother has for the choice, family and friends may indicate that the woman is somehow not a good mother, which can produce anxiety, anger and guilt on her part. Now, besides having to be a loving wife, and housewife, the new mother must deal with the lack of help in performing a myriad of new tasks (Kinzer, 1979). Another stressor, guilt, may be involved if the mother must or chooses to return to work or school. Guilt can be compounded by the spouse, parents and in-laws, who will not or cannot understand nor support anything less than a traditional wife/mother. Weissman and Klerman (1977) cited a study which reported that working-class women with young children living at home had the highest rates of depression.

Many never-married single mothers do have full time jobs. In order to cope they must make child care arrangements and may have to lower standards in housework and meal preparation. Women who are single by circumstance and have children, are less well prepared for the single-parent role than the never-married mothers, which is related to the manner in which they become single-parents (Rising, 1979). Barnett and Baruch (1981) found in their study that "regardless of whether a woman is married or not, employed or not, having responsibility for a dependent child often increases her experience of multiple role strain" (p. 10).

Occupational Stress

In reviewing occupational stressors, both traditional and nontraditional occupations must be considered. A traditional occupation which does not have some of the stressors of working outside the home, and has some unique stressors of its own, is that of housewife (Lopata, 1971). There is no formal training to prepare a woman to work in the home, and therefore many women feel that they were inadequately trained to be housewives. Being unprepared is most assuredly a source of stress, producing a greater incidence of frustration, anxiety and anger. There is no specific job description for a housewife, no specific schedule to follow, but there is a great deal of confusion about what task should have priority (Williams, 1977). Not knowing where to start produces more than enough anxiety and frustration to be stressful. There are no rewards for a job well-done; her efforts go unrecognized. The tasks of a housewife are boring and monotonous, and it is this monotony that is one of the worst stressors, experienced as a housewife (Morse & Furst, 1979). A principal way to reduce daily stress is to schedule private periods during the day to relax and exercise, but the housewife rarely has the time or opportunity to relax, exercise or simply to have time just to herself (Morse & Furst, 1979). The stress of an overburdened housewife could be reduced if the family could afford household help. Unlike a job outside the home, housewives never get fired,

and the only way to quit is to elect for a divorce, or change roles, or share roles. "Knowing there is no escape from a position can greatly increase stress" (Morse & Furst, 1982, p. 256). Another stressful aspect of being a housewife is that it is a low status profession, and although a housewife has the responsibility of purchasing food, clothes and household items and managing the family budget, she actually has a lack of control over the finances; this may result in conflicts over the disbursement of income.

When women do go to work outside the home, mainly because of economic need, they are usually sorted into traditional female positions because of lack of sufficient training (Krupsak, 1977). When a person is given little choice in deciding what they do or do not want to do, anger and frustration builds and stress increases (Williams, 1977). At the same time, women are expected to care for the household and children. Extra spending money may reduce the stress of some situations, but it can also increase stress by creating marital tension when the husband frowns upon the wife's working or just tolerates it as a diversion, which of course, is not beneficial to the woman's self-esteem or self-image (Janeway, 1971). Perceiving their husbands as disapproving of their employment status contributes to multiple role strain (Barnett & Baruch, 1981). As a working woman, psychological reward is gained by receiving financial compensation for one's

efforts. For some women, it also breaks up the monotony of household pressures (Weissman & Klerman, 1977). There is also companionship found in new acquaintances made on the job, and therefore, it can serve to overcome loneliness (Weissman & Klerman, 1977). Working can also serve to prepare women for the future, when they may become the family's sole provider. Working outside the home also fills a woman's needs for achievement and recognition, which are just as strong as a man's (Hoffman & Nye, 1974). Working outside the home gives a woman a sense of identity distinct from that of wife and mother (Potts, 1979). Jobs can be a source of economic power which can help women overcome dependency (Chesler & Goodman, 1976).

There are, of course, work-related problems which plague women. Child care is a major problem creating anxiety, worry and guilt for the women and is a major expense of working (Curtis, 1976; Harris, 1979). Though working women reported more frequent doubts of their adequacy as mothers, they showed more self-acceptance and fewer physical symptoms of disease (Potts, 1979). The majority of working women are disadvantaged by being forced into monotonous, low-status and low-paying jobs, which reflect an extension of their sex role (Helson, 1972; Moss, 1977; Nelson, 1977)). A very stressful work-related problem is sexual and sexist harassment (Chastain, 1980). Sexual harassment can be overt or implied sexual advances or suggestions, being coerced to

listen to sexual remarks or jokes, being required to dress in a manner not required by the type of job, and being touched without consent. Sexist harassment "is a belief that the male is superior to the female and has the right to keep her in a subordinate role" (Morse & Furst, 1982, p. 269), which is also illegal. The anxiety about becoming pregnant while working should be presently reduced; the law protects working women who may later become pregnant, or who are currently pregnant on the job and will need a leave of absence and medical benefits, and perhaps a less strenuous job upon their return to work (Simpson, 1979). Another problem is that women find they need to alter their behavior from passive to assertive while on the job (Brothers, 1979). A woman may also lose out on better positions and promotions, if they are related to transfer out of town, since she is not mobile if she has family ties that restrict her (Marwell, Rosenfeld & Spelerman, 1979). Many married working wife/mothers find they have even less time since they began working (Dundan, 1980). As a result of these problems, working women often develop psychological disturbances; this is especially true for the working woman with a traditional background, who has role conflicts and stress that influence her both at home and at work (Powell & Reznikoff, 1976). A study has shown that gainfully employed women were more likely to report Type A behavior, daily stress, and marital dissatisfaction than were housewives (Ibrahim, 1980).

Dual career families have special problems, in addition to those mentioned previously (Sifford, 1977). The partners must have an equitable sharing arrangement for chores, child care, and individual private time (Rueschemeyer, 1978). Under some circumstances role reversal may occur, depending on priorities at the time, which the husband may not want to share. Problems can arise from the way in which equally earned money is used. There may also be jealousy of the other partner's career, but dual career couples usually work in the same profession, even at the same location, which has its advantages. The major source of stress relating to career is the job offer, which involves a move, and any solution can cause a certain amount of stress between partners. Though there may be problems in planning and raising a family for a dual career family, the children are often proud of their parents and become independent very early. It is the quality of time given to the children, rather than the quantity of time, that seems to be the key to this outcome.

There are many traditional female professions, including teaching, nursing, dental hygiene, social work, librarianship, dietetics, counseling and art which offer interest and security. There are advantages and disadvantages in any profession.

Teaching may be rewarding, but there are several potential stressors (Gross, 1979): the day is not over with the last class, work is taken home, disciplinary actions may have to be taken,

salaries are not good, and there is physical and sexual harassment.

Nurses are automatically placed in a subordinate role, being attendable and answerable to the physician, and they must never disagree with the physician, though the physician may clearly be in error (Stein, 1967). They also suffer sexist and sexual harassment and must cope with irregular shifts and little or no support for much of their detailed knowledge (Menikheim, 1979). Nursing may result in fear of making mistakes, frustration, repressed anger, and low self-image, which some nurses take home while others internalize the stress. These produce "burnout", which results in alcoholism, depressions, marital conflicts and suicide (Weisenlee, 1979).

Dental hygienists are subjected to the same stressors as nurses, with the addition of unique factors such as repetitive procedures, continual high performance, time pressures, isolation and fatigue of sitting in the same place and position (Levin, 1980).

Therapists, basically dealing with physical, mental or social handicaps and disabilities, can have rewarding careers, but the major stressor is working with impaired or disabled individuals whose progress may be slow and painstaking (Employment and Training Administration, 1979).

Dietetics and nutrition entail jobs similar to the role of homemaker and may be stressful for that reason (Employment and Training Administration, 1979; Department of Labor, 1978). The traditional role of helper may be found as a counselor. The major disadvantage here is the amount of competition for the available jobs. Social work is also related to the helper role, but it involves major stressors such as dealing with "broken" families, working in unsafe locations, and overtime work. There are various areas of stress in librarianship, but the general major stressors are the inherent silence, overtime work and stiff competition for positions. For women in the performing or creative arts the main stressors are employment and job security.

The nontraditional female professions include business, science, law, health professions, politics, religion, sports and the military (Morse & Furst, 1982). For the purposes of this review only law and health professions will be considered. A study by Tung (1980) revealed that in comparing the preference by employers of applicants for stressful administrative positions, women were preferred over men because it would be acceptable behavior for women to express their feelings, emotionally, when trying to cope with stressful situations.

At the academic level there is keen competition getting into law school, and achieving and maintaining a high class rank, needless to say, and, bar exams induce a great deal of stress

(Department of Labor, 1978). Though lawyers may be self-employed and set their own fees, hours and vacation, the law is a potentially stressful profession. The hours of intense studying and preparation are long; lawyers must keep abreast of changes in the law; there are hassles with accused persons, criminals, juries, judges, other lawyers, media and the public; they must deal with intense pressure during trials, and adjust to being constantly on the run; and, especially for women, they must deal with harassment and prejudice in and out of court.

The health professions are principally medicine, dentistry, veterinary medicine, podiatry, osteopathy, chiropractic, optometry, and pharmacy.

Competition for acceptance into medical school is extremely high. Students are under intense pressure during academic training, practical training, and later, as physicians, throughout the duration of their practices. The constant dealing with sickness and death can be devastating to some individuals. The rates of drug addiction, alcoholism and depression are even higher among female medical students and physicians (Jones & Shapiro, 1979). Their suicide rate is four times higher than that of the general female population. Aside from the inherent psychological difficulties of medicine, women must still deal with sexism, academically and professionally.

Dentistry has some of the same stressors and advantages as medicine for women (Morse & Furst, 1978). Dentists in general also suffer high levels of stress-related diseases and disorders. In addition, female dental students face harassment, which may be more prevalent in dental school than medical school.

Veterinary medicine is similarly complicated (Jones & Shapiro, 1979). Podiatry, osteopathy, chiropractic and optometry are all similar in advantages and disadvantages, academically and professionally, to medicine. There are additional factors to be considered in pharmacy (Donelson, 1978): a good "business head" is required, hours may be long, one may need to be aggressive and must keep up with pharmacology literature.

From the foregoing review of the available pertinent literature one can surmise that there are many variables present in lifestyles which produce stress. It is also evident that the quantity of stress that women experience has increased as more of them have become "gainfully" employed. This factor has necessitated an alteration of lifestyles for many women. In light of these changing times one must begin to ask questions about the level of stress women are now experiencing, and about its effects upon their physical health and mental/emotional well-being. Within the literature review I have reported the effects of various sources of stress such as occupational, parental and

marital situations. Consider the stress potential when an individual attempts and/or succeeds in maintaining just one category, such as occupation, at a level proximate to perfection. Then consider the quantity of stress which can or must be experienced by the superwoman/supermom/superworker, who attempts to achieve excellence in every role that she plays. What would the effects be upon a woman's health and mental/emotional well-being under these circumstances? How do married women compare with respect to single women who are deprived of the positive social and emotional supports usually reserved for married women? Can the multitude of roles actually counterbalance the stress of singular sources by buffering each other's negative effects? Or are women ultimately going to achieve total equality with their male counterparts by sacrificing their biological advantages of longevity? This study proposes to address these questions. The study will survey women with various marital, parental and occupational designations and will attempt to discover possible differences in the effects of stress for these various life situations by evaluating each woman's sources of stress. In addition, buffering or coping resources, health status, and levels of anxiety, depression and hostility will be evaluated. I expect to find that single mothers employed in nontraditional occupations will score negatively in comparison to their married counterparts, if only by reason of their lack of

social supports or coping resources. Though some studies have suggested that one role can buffer another, I believe that this may be true, but only to a certain degree. To a certain extent working outside the home can relieve the monotony and isolation of a housewife and improve self-esteem and self-confidence, whereas home and family can be comforting and supportive after a difficult day at work. This certainly would not be the case if working was a burden and created many difficulties and/or an individual's marriage was unstable and unsupportive. As to decreased life span of women as a group, some researchers have suggested that this process is occurring now; my study may only be able to predict the health of the test subjects and perhaps suggest a trend for certain groups of women or for women in general.

CHAPTER 8

METHOD

Subjects

The subjects were female, ages 25 to 45. The minimal age limit allowed for the completion of a college education or the equivalent in professional training, yet allowed for being married and having children. The maximum age was set to accommodate those professions which may require an extended period of training, such as medicine, and also provided for families which were started after training was acquired. The educational level of the women were college graduate or the equivalent, and above. The women were employed in traditional and nontraditional occupations. The traditional occupations used included 6 secretaries, 4 teachers, 3 housewives, 10 librarians, 6 dietitians, and 4 dental hygienists. The nontraditional professions included 6 doctors, 8 lawyers, 6 professors, 4 dentists, 3 veterinarians, 1 chiropractor, and 3 psychologists. Both traditionally and nontraditionally employed subjects varied in combinations of the factors of marital and parental status (single-no children; single-children; married-no children; married-children); thus, the study employed a 2 x 2 x 2 factorial design. Volunteers were solicited from various educational and professional institutions, and private practices and firms from around the Kansas City Metropolitan area. The subjects in the study were assigned by occupational designation

(traditional or nontraditional) first, then by their marital status, and finally by their parental status (children or no children). A total of 64 women were assigned to the 8 conditions as follows: 8 married, nontraditional with children (MNTK); 10 married, nontraditional without children (MNTNK); 8 single, nontraditional without children (SNTNK); 5 single nontraditional with children (SNTK); 6 married, traditional, without children (MTNK); 10 married, traditional with children (MTK); 10 single, traditional without children (STNK); 7 single, traditional with children (STK). The subjects were guaranteed that any and all information provided or acquired through questionnaires were confidential and reported anonymously. Treatment of subjects was in accordance with the ethical standards of the American Psychological Assocation.

Materials

All subjects were asked to complete a general information form concerning age, occupation, marital and parental status, educational level and such personal information necessary to recontact the subjects if circumstances required it. To maintain confidentiality, identification numbers were assigned to each form. There were four sources of measurement (evaluation) utilized in this study. Three of the four instruments were questionnaires authored by Charles L. Sheridan; these were: The Scale of Stress Assessment, Part II - Inventory of Stressors (1981a); The Inventory of Health Status (1981b); and The

Inventory of Stress Resistance Resources (1981c). The Inventory of Health Status (H) served as an assessment of each subject's physical health, real or perceived, over the previous six-month period. The Inventory of Stress Resistance Resources (R) surveyed the same six-month period for the subjects' sources and abilities to cope with stress. The Comprehensive Scale of Stress Assessment (S) contained statements reflecting sources of stress which did or did not apply to each individual. The fourth instrument of evaluation, the Multiple Affect Adjective Check List (MAACL)-"In General Form", was authored by Marvin Zuckerman and Bernard Lubin (1965). This form contained a set of 132 adjectives to be checked by the subject as they applied to how they felt in general. This instrument was utilized to measure each subject's feelings of anxiety (MA), depression (MD), and hostility (MH), and overall dysphoria (MDYS) in an attempt to gain purchase on their mental well-being.

Procedure

The subjects completed all instruments as they were recruited and assigned to the various groups (before the complete groups were formed). Once a subject was contacted an appointment time was set for the administration of the measures; subjects completed the measures on an individual or group basis. The appointments were set in October, 1983 and in February, 1984 at a time and place convenient for each subject. The subjects were informed of

the nature of the experiment and guaranteed confidentiality. They were then asked to fill out the general information form after its use was explained. Upon the presentation of the MAACL the subjects were clearly instructed to check the words which apply to how they feel in general. The administration of Sheridan's forms was preceded by instructions to the subjects to answer the questions as they apply to them personally. The completion of all instruments took subjects an average time of 30 minutes. During my review of Sheridan's materials I found that they could elicit some degree of stress. My first thought was then to administer the MAACL first to avoid these influences upon the anxiety, depression and hostility measures. After further consideration I came to the conclusion that precautions should be taken to avoid possible order effects from influencing the outcomes of each measure, therefore the order of the administration of the measures were counterbalanced across subjects.

As all information was completed by each subject their data were placed into the appropriate condition resulting from the combination of the marital, occupational and parental factors. The use of all possible combinations of the above conditions provided built-in counterbalancing and controls. The data were then statistically analyzed. The purpose of those analyses was to determine if any significant differences existed between the subjects in the eight conditions on the measures of the multiple

role stress as utilized in this study; this question was addressed via 3-way analyses of variance (ANOVA) performed on the various measures. Further, Pearson r correlational analyses were performed to determine the degrees of correlation between the various measures.

CHAPTER 9

RESULTS

All group means and S.D.s for each measure are reported in Tables 1 and 2. The only established norms available were for Stressors and Resistance Resources. The Inventory of Stressors had three norms available: a heterogeneous group mean of 33.71 with a S.D. of 11.13 (Sheridan, 1981); a single mothers group mean of 39.70, and a married mothers group mean of 33.23 (Sexton, 1981). Two norms for resistance were available: Means = 46.20 and 45.85, and S.D.s 25.15 and 25.93 (Sheridan, 1984, personal communication). The stress means of the groups in Table 1 varied from 2.71 below the norm up to 1.19 points above the norm. The stress means of the groups in Table 2 varied from the norm as follows: MNTNK, SNTNK, MTK, MTNK, STK and STNK varied 3.51 points below to 0.72 points above the norm; the MNTK group was 7.54 points above the norm at 41.25; the SNTK group was 5.91 points below the norm at 27.8 (level of significance not determined).

In general, mean scores on the various measures did not differ appreciably from available norms. Single women appeared healthier than married women, and single mothers in nontraditional occupations exhibited the most favorable scores on all 7 measures. Three-way analyses of variance performed on the 7 measures

Table 1

Means: Overall Sample and Major Groupings

Measures	Overall	NT	T	M	S	K	NK
Stress							
M	32.83	33.13	32.55	33.82	31.70	34.90	31.00
SD	9.74	11.61	7.56	10.07	9.23	10.57	8.54
Health							
M	17.03	17.48	16.61	*18.88	*14.93	17.20	16.88
SD	11.62	12.08	11.16	11.32	11.61	13.11	10.13
Resistance							
M	46.00	*52.58	*39.82	49.35	42.20	47.20	44.94
SD	22.09	22.39	19.92	21.20	22.47	22.04	22.08
Anxiety							
M	7.88	7.42	8.39	7.35	8.47	7.57	8.13
SD	4.78	4.93	4.60	4.31	5.20	5.06	4.50
Depression							
M	12.80	11.81	13.73	12.09	13.60	12.77	12.91
SD	6.43	7.06	5.62	5.51	7.25	7.17	5.75
Hostility							
M	6.44	6.16	6.70	6.41	6.47	6.53	6.35
SD	3.22	3.37	3.05	3.41	2.99	3.69	2.73
Dysphoria							
M	27.11	25.39	28.73	25.85	28.53	26.87	27.32
SD	13.44	14.48	12.10	12.04	14.63	15.06	11.76

Note: * indicates High and Low Means

Table 2

Means: Final 8 Conditions

Measures	MNTK	MNTNK	SNTK	SNTNK	MTK	MTNK	STK	STNK
Stress								
M	*41.25	30.20	*27.80	32.00	33.70	30.17	34.43	31.50
SD	10.58	9.22	10.81	11.65	9.76	4.06	6.86	6.52
Health								
M	*22.75	20.50	*10.60	12.75	14.9	17.67	18.86	16.10
SD	14.2	10.28	9.09	9.32	10.34	6.94	14.68	10.82
Resistance								
M	51.38	56.60	*58.60	45.00	44.00	43.50	38.86	*34.10
SD	21.18	21.39	23.03	21.62	20.78	16.14	19.42	19.94
Anxiety								
M	8.25	6.30	*5.40	9.25	6.90	8.67	*9.29	8.80
SD	4.71	4.56	5.71	4.18	3.91	3.25	5.65	4.77
Depression								
M	13.88	11.40	*8.40	12.38	11.30	12.17	*16.71	15.00
SD	6.86	5.39	10.01	5.91	4.54	4.52	5.65	5.81
Hostility								
M	6.63	6.70	*4.80	5.88	6.44	5.67	*7.86	6.80
SD	3.16	3.58	4.40	4.11	4.05	1.80	2.42	2.56
Dysphoria								
M	28.75	24.40	*18.60	27.50	24.60	26.50	*33.86	30.60
SD	13.58	12.82	19.97	11.31	12.10	6.34	12.60	12.64

Note: * indicates High and Low Means

occupations possessed greater resistance resources than did those in traditional occupations [$F(1,56) = 5.03$, $p < .05$].

As stated, a 3-way ANOVA was performed on each of the following measures: stress (S), resistance (R), health (H), anxiety (MA), depression (MD), hostility (MH), and dysphoria (MDYS). The F values for stress, anxiety, hostility and dysphoria were not reliable.

The ANOVA of resistance scores revealed a reliable difference as a function of occupational status, F (1,56) = 5.03, $p < .05$. The mean score for the nontraditionally employed group was 52.89, and that of the traditionally employed group 40.11.

The ANOVA of health scores revealed a noteworthy, but non-reliable F value for the interaction between occupational designation and marital status, F (1,56) = 3.37, $p < .07$. Similarly the ANOVA on depression revealed a sizeable, but unreliable interaction between occupational designation and marital status, F (1,56) = 3.73, $p < .06$.

Pearson product-moment correlation coefficients were computed between the 7 measures for the 15 groupings of the women as described above; the r values and their associated probabilities are reported in Tables 3 and 4. Not surprisingly, the subscales of the MAACL were highly correlated with each other and with

Table 3

Correlations: Overall Sample and Major Groupings

Correlation	Overall df = 62	NT 29	T 31	H 34	S 30	K 30	NK 32
S-H	.602***	.637***	.568***	.584***	.611***	.738***	.433**
S-R	-.421**	-.543***	-.311	-.306	-.615***	-.438*	-.450**
S-MA	.602***	.681***	.518**	.550***	.709***	.646***	.608***
S-MD	.451***	.528***	.344*	.371*	.577***	.476**	.428**
S-MH	.423**	.464**	.382*	.323*	.572***	.418*	.438**
S-MDYS	.532***	.597***	.453**	.458**	.652***	.546**	.547***
H-R	-.362**	-.384*	-.396*	-.263	-.543***	-.503**	-.210
H-MA	.388**	.421*	.364*	.259	.564***	.532**	.210
H-MD	.318*	.363*	.283	.180	.488**	.409*	.199
H-MH	.214	.372*	.045	.050	.433**	.242	.171
H-MDYS	.342**	.407*	.281	.189	.529**	433*	.211
R-MA	-.761***	-.861***	-.720***	-.675***	-.834***	-.812***	-.713***
R-MD	-.729***	-.740***	-.707***	-.563***	-.864***	-.711***	-.752***
R-MH	-.504***	-.482**	-.528**	-.388*	-.663***	-.645***	-.353*
R-MDYS	-.742***	-.750***	-.734***	-.609***	-.857***	-.770***	-.723***
MA-MD	.840***	.866***	.811***	.788***	.874***	.860***	.825***
MA-MH	.752***	.768***	.730***	.725***	.810***	.806***	.694***
MA-MDYS	.939***	.941***	.643***	.924***	.950***	.943***	.940***
MD-MH	.736***	.807***	.643***	.681***	.830***	.819***	.595***
MD-MDYS	.955***	.970***	.934***	.932***	.972***	.966***	.936***
MH-MDYS	.861***	.888***	.828***	.854***	.900***	.906***	.795***

Note: *p<.05, **p<.01, ***p<.001

Table 4

Correlations: Final 8 Conditions

Correlation	MNIK df = 8	MNIMK 6	SNIK 3	SNIMK 6	MIK 8	MIMK 4	SIK 5	SIMK 8
S-H	.958†††	.360	.613	.573	.540	.155	.757†	.677†
S-R	-.588	-.455	-.820	-.546	-.088	-.169	-.729	-.512
S-MA	.643	.752†	.839	.652	.452	.054	.866††	.630†
S-MD	.227	.650†	.706	.495	.408	.600	.636	.464
S-MH	.320	.438	.810	.460	.250	.693	.425	.521
S-MDYS	.412	.663†	.773	.582	.383	-.203	.755†	.557
H-R	-.662	-.193	-.928†††	-.226	-.118	-.435	.663	-.465
H-MA	.659	.052	.827	.589	.111	-.093	.530	.459
H-MD	.380	-.095	.882†	.328	.077	.144	.252	.484
H-MH	.466	-.096	.818	.534	-.104	-.530	-.065	.484
H-MDYS	.529	-.048	.859†	.484	.030	-.094	.338	.494
R-MA	-.721†	-.748†	-.973†††	-.843††	-.805††	-.120	-.872†††	-.763††
R-MD	-.573	-.596	-.966†††	-.951†††	-.698†	-.521	-.701	-.826††
R-MH	-.369	-.401	-.958†††	-.356	-.624†	.178	-.609	-.616
R-MDYS	-.625	-.629	-.974†††	-.872††	-.731†	-.383	-.822†	-.793††
MA-MD	.754†	.890†††	.972††	.917†††	.942†††	.353	.835†	.897†††
MA-MH	.736†	.795††	.981††	.712†	.879†††	.381	.693	.888†††
MA-MDYS	.899††	.951†††	.990†††	.976†††	.971†††	.873†	.956†††	.970†††
MD-MH	.793†	.830††	.973††	.587	.889†††	.547	.614	.846††
MD-MDYS	.951†††	.968†††	.994†††	.966†††	.977†††	.740	.940†††	.970†††
MH-MDYS	.889††	.911†††	.989†††	.749†	.953†††	.087	.778†	.927†††

Note: $^{\dagger}p<.05$, $^{\dagger\dagger}p<.01$, $^{\dagger\dagger\dagger}p<.001$

overall dysphoria in most cases. Table 3 indicates that stress is reliably correlated with ill health and negatively correlated with resistance resources. While health itself is not highly correlated with the MAACL, resistance to stress is, reliably and negatively. Resistance correlated negatively with all other measures. Table 3 also shows that for the overall group, as well as for the single women, the various measures are virtually all reliably correlated with one another.

All stress, all "resistance to MAACL" and all "MAACL to MAACL" correlations were reliable at $p<.001$. Further, all "MAACL to MAACL" correlations were reliable at $p<.001$, and all "resistance to MAACL" correlations were reliable.

There was only one difference between the K group and the NK group. On the health correlations the K group scored reliably on all but the H-MH correlation. The NK group scored reliably on only the S-H health correlation.

The data of Table 4 indicate an apparent lack of reliable correlations, with the exception of the intercorrelations of the subscales of the MAACL. This may stem from the small Ns of these 8 subgroups. Nonetheless, there is a reliable negative correlation between resistance resources and anxiety in all cases save one, indicating that anxiety may be a viable predictor of how well a person copes with stress.

Before comparing the reliable correlations presented in Table 4, it should be noted that due to some of the very small degrees of freedom for the 8 conditions (groups) in the table, many high correlations did not achieve reliability. This should be kept in mind when referring to Table 4 and noting the unreliable high correlations in certain groups, such as the SNTK group.

The following groups did not score reliably on any stress correlations: SNTK, SNTNK, MTK, and MTNK. The S-H correlation was reliable for the MNTK, STK, and STNK groups. The S-MA correlation was reliable for the MNTK, STK, and STNK groups. The MNTNK, STK, and STNK groups. The MNTNK and STK groups scored reliably on the S-MDYS correlation. The MNTNK also scored reliably on the S-MD correlation.

The only group to score reliably on any health correlation was SNTK. The correlation in which this group scored reliably were H-R, H-MD and H-MDYS.

The MTK and SNTK groups scored reliably on all "resistance to MAACL" correlations. Two other groups, SNTNK and STNK, scored reliably on all "resistance to MAACL" correlations with the exception of the R-MH correlation. The resistance correlations reliable for the STK group were R-MA and R-MDYS, whereas the MNTK and MNTNK groups scored reliably on only the R-MA correlation.

All "MAACL to MAACL" correlations were reliable for 5 of the 8 groups. The 3 exceptions were the SNTNK, MTNK and STK groups.

The SNTNK group scored reliable on all MAACL correlations except MD-MH. The STK group scored reliably on the MA-MD, MA-MDYS, MD-MDYS, and MH-MDYS correlations, whereas the MTNK group scored reliably on only the MA-MDYS correlation. It should also be noted that the MA-MDYS correlation was the only reliable score, out of a possible 21 correlations, for the MTNK group.

Table 3 also illustrates that the NT group correlated reliably on S-R whereas the T group did not. On all of the health correlations the NT group's r scores were reliable, but the T group scored reliably only on the S-H, H-R and H-MA correlations.

In Table 3 differences can also be seen between the M group and the S group. The M group did not correlate reliably on S-R, whereas the S group did. The S group r scores were reliable on every health correlation, but the M group scored reliably on S-H only.

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CHAPTER 10

DISCUSSION

The following discussion will answer those questions posed prior to the study. The level of stress experienced by women in this study was close to the established heterogeneous group norm. With the exception of Groups MNTK and SNTK, the level of stress being experienced overall would be considered average (though many individual scores were well above average and some were well below). It appears that the quantity and quality of effects of stress upon physical health and mental well-being is determined greatly by the amount of resources and the abilities to use them to cope with stress (or the internal and external supports an individual possesses). The effects appear to be more severe in regard to mental well-being (versus physical health) when resistance is low. For example, the mean stress level is highest for the wife/professional (NT)/mother, at 41.25, but her resistance (51.38) is above the norm of 46.20. The effects of stress appear upon her physical health, resulting in a health mean of 22.75 which is the highest group health mean and is 5.72 points above the overall sample mean, whereas the effects on her mental well-being are close to the overall sample means and within the range contained in Table 2. It would appear that Group MNTK comes the closest by definition to Friedan's (1981) superwomen. Also, this group's mean on stress tends to support the statement that

marriage is stress producing for women (Kinzer, 1979; Stewart & Salt, 1981). In this case, the resistance mean indicates that resistance may be gained from other roles (such as occupational) which can buffer the affect of stress on a woman's mental attitude (Bem, 1975), but ill health is not as strongly influenced, perhaps, because of occupation (McKeown, 1980; Pflanz, 1978). In comparing married women to single women (see Table 1), the married group in general scored higher on resistance and lower on dysphoria, but they were less healthy (Kinzer, 1979, Stewart & Salt, 1981). On Table 2, the advantages and disadvantages of marriage are not consistent with those of Table 1, which is especially evident when comparing Group SNTK with any other. By comparing the final 8 conditions in Table 2 to the "collapsed" groups in Table 1, one could suggest that the combination of roles can either buffer or enhance the effects of stress. Further research using larger groups of subjects is indicated; in addition, performing an item analysis of stress and resistance to determine which combination of roles tend to be more beneficial or more detrimental to clarify this question is also indicated. Without population norms a comparison of health of these groups to the male population is not possible at this time. An additional sample group of men only should be tested and compared to the groups of women in hopes that it would provide information that could suggest a trend, at least, for the groups in this study.

The reliable difference in resistance resources as a function of occupational status could, for nontraditionally employed women, be a reflection of a "potentially" higher economic status and increased social power (Bem, 1975); increased dimensions for creative, intellectual and emotional input and output; increased self-esteem; and personal (internal) control over their lives (Kinzer, 1979). A higher level of education, and intellectual and professional achievements along with a broader exposure to the external world (decreased isolation) "could" result in a more realistic view of the world (Stewart & Salt, 1981). Family supports could vary depending on the attitudes existing within the primary family structure with respect to a woman's role in the family and the work force, therefore this factor may not have played a role in these findings (Potts, 1979). An analysis of a more detailed breakdown of the resistance resources factors is suggested in order to determine what particular support factors are the source of this significant influence.

The noteworthy, but nonreliable interactions of occupational designation and marital status on the health and depression ANOVAs may have been affected by some of the small Ns in the final group breakdown into the 8 conditions. This possibility could be tested by extending the number of subjects in the groups with the lower Ns until the Ns were equal across all conditions.

The negative correlations of resistance to all other measures may have resulted from a greater number of resistance resources being available to an individual; with more supports, the lower the stress, health and dysphoria scores will be in the majority of cases (Table 3 and 4 - not all resistance correlations were reliable). On the overall correlations H-MH was not reliable. This correlation was reliable in only two of fifteen possible conditions across Tables 3 and 4. The two reliable correlations were essentially combined with four very low unreliable correlations in Table 3 to form the overall correlation. The use of all conditions in the overall correlational analysis eliminated any reliability. In Table 3 the conditions with reliable correlations on H-MH, NT and S, also correlated reliably on H-P and R-MH, therefore the H-MH correlation may indicate that these two groups have or receive less personal or emotional support during a decrease in physical health (Stewart & Salt, 1981). All other correlations in the overall analysis were reliable, suggesting that these instruments when used in combination would be very useful in the assessment of stress factors and effects, in addition to providing pertinent information in the determination of courses of treatment for the (female) clients of professional practioners in psychology, counseling and stress management.

In Table 3 all the "resistance to MAACL" correlations were reliable. Those negative correlations, coupled with the finding

that all reliable "stress to MAACL" correlations were lower than all "resistance to MAACL" correlations support a relationship between stress, resistance and dysphoria in which stress, though it is positively correlated with dysphoria, can be offset by resistance. In other words, as the level of resistance increases, the effect of stress upon dysphoria decreases or is buffered. Therefore, whatever the amount of stress an individual is experiencing, she will not manifest proportionate levels of dysphoria if her resistance resources are high enough to protect her. From the correlations to the MAACL measures, resistance appears to correlate equally on anxiety, depression and total dysphoria at $p < .001$. Resistance's relationship to hostility correlates lower than the other measures and is less reliable. It might be suggested that resistance levels have less consistent power over hostility levels, but I believe it is more a function of the relationship between the MAACL measures themselves that account for this difference in reliability.

The consistently high degree of reliability in the correlations between the MAACL measures in Table 3, indicates that any one of the MAACL measures is a reliable indicator of all other MAACL measures. The correlations between these measures also indicate that anxiety and depression are equal contributors to (indicators of) dysphoria; hostility follows as a close second in that contribution to total dysphoria, and anxiety and depression

levels are fairly equal in their power to indicate hostility levels.

In comparing the correlations of the NT and T groups there are some subtle and some obvious differences. One nontraditional group scored reliably on every correlation, whereas the traditional group did not (and reliable or not, all but two NT correlations were higher than the T correlations). The T group did not correlate reliability on S-R, H-MD, H-MH and H-MDYS, therefore the T groups stress levels are unrelated to their resistance levels and their physical health is only related to one fact of their mental well-being (of those measured here). The unreliability on the health correlations may be due to subject variability. This suggests that resistance resources of traditionally employed women cannot consistently (or reliably) buffer their stressors (Barnett & Baruch, 1981). The outcome of the resistance ANOVA, where there was a reliably significant difference in resistance levels for NT versus T, supports this claim. Also, it is clear that the stress means for NT and T are very similar, whereas the resistance means are substantially different (see Table 1). Resistance resources are a positive function of occupational status, as discussed in the ANOVA results. Simply, traditionally employed women lack the resistance resources to protect them from even average levels of stress (Nelson, 1972; Kinzer, 1979).

The differences between Groups M and S also exist in the S-R and health correlations, as in the NT and T groups. There is a difference between the health means of marrieds and singles (see Table 1). The health ANOVA did indicate that a noteworthy difference existed between the occupational statuses, therefore the marital status difference could be attributed to collapsing those group scores across the occupational statuses. the interaction means indicate that SNT, ST and MT were equal in physical health, but the MNT group was less healthy. This trend is seen in both Tables 3 and 4. The same "reliable vs non-reliable" effect is present when comparing K to NK, which is logical considering the group is collapsed across marital status and occupational designation. In comparing Groups MNTK and MNTNK one notes that only one reliable correlation for health appears in the MNTK group. Examination of the health correlations in the SNTK group reveals two interesting findings. First, it appears that occupational, marital and parental statuses are all influencing health. Second, the order of influence (greatest to least) appears to be occupation (NT), marital status (S) and then parental status (K). Upon the basis of the reliable results reported I would conclude that the above, findings result from differences in resistance between Groups NT and T; however, because of the small dfs in the final 8 conditions, and because the means of the SNTK group (Table 2) indicate they fare better in

all areas than any other group, it would be advisable to test additional subjects before drawing any firm conclusions.

The stark contrast between Tables 3 and 4 with regard to reliability of the correlations, may stem from a combination of small Ns (dfs), and the previously described interactions. The one group I cannot explain is MTNK, even if the dfs and interactional effects are taken into consideration. I cannot explain the unreliable, low correlations on the "resistance to MAACL" and "MAACL to MAACL" measures. In comparison the MTNK group's means are within the high and low limits reported in Table 2, but the group has all of the lowest standard deviations.

Though it has been noted that Group SNTK scored more favorably than any other group, it has not been noted that this particular outcome was the opposite of what was expected (Friedan, 1981; Kinzer, 1979; Stewart & Salt, 1981). The reason given for this prediction was an expected lack of resistance in that group; indeed, Group SNTK had the highest resistance mean. Without a detailed analysis of the stress and resistance forms completed by each subject one cannot be sure whether this phenomena is a result of role combination or due to a particular status. I tend to believe that it is due to changing attitudes (away from critical traditional attitudes) toward women who are single (or nontraditionally employed), which in turn positively affects their support structure. A tendency which I believe lends support to

this is that the single women are in general healthier than the marrieds, which is in complete contradiction of the literature (Kinzer, 1979; Stewart & Salt, 1981). A cultural attitude shift concerning women's roles and their traditionally accepted place in our society may have occurred to a sufficient degree to begin to differentially appear in stress and resistance levels. If these major changes in the way we think and feel are occurring to this degree we need to continue this type of research in detail and expand it to encompass a large heterogeneous population. If changing attitudes are affecting women in ways which are contradictory to past literature, then what is happening to men? Are the changes going to affect all types of roles positively? Are groups of men going to be affected negatively as groups of women are affected positively? This is a restatement of Fridean's (1981) question, "Are men and women moving in opposite directions..." (p. 38). The mere potential impact upon the health of our society warrants further research.

REFERENCES

Anderson, T. W. (1973). Mortality from ischemic heart disease: Changes in middle-aged men since 1900. Journal of the American Medical Association, 224 336-338.

Arehart-Treichel, J. (1977, November). Can your personality kill you? New York Magazine, 10, 62-67.

Arieti, S. (1979). Roots of depression: The power of the dominant other. Psychology Today, 12 (11), 54-58, 92-93.

Baird, J. E. (9176). Sex differences in group communication: A review of relevant research. Quarterly Journal of Speech, 62, 179-192.

Bardwick, T. & Donovan, E. (1971). Ambivalence: The socialization of women. In V. Gornick & B. K. Moran (eds.), Women in Sexist Society. New York: Basic Books, pp. 225-241.

Barnett, R. C. & Baruch, G. K. (1979). Multiple roles and wellbeing: A study of mothers of preschool age children. Unpublished manuscript, Wellesley College, Center for Research on Women.

Barnett, R. C. & Baruch, G. K. (1981). Multiple role strain, number of roles and psychological well being. Unpublished manuscript, Wellesley College, Center for Research on Women.

Beckman, L. J. (1975). Women alcoholics: A review of social and psychological studies. Journal of Studies on Alcohol, 36, 797-824.

Beeson, P. B., McDermott, W., & Wyngaarden, J. B., (1979). Cecil Textbook of Medicine (15th ed.). Philadelphia: W. B. Saunders.

Bem, S. L. (1975). Sex role adaptability: One consequence of psychological androgyny. Journal of Personality and Social Psychology, 31(4), 634-643.

Bem, S. L. & Lenney, E. (1976). Sex typing and the avoidance of cross-sex behavior. Journal of Personality and Social Psychology, 33(1), 48-54.

Bernard, J. (1971). The paradox of happy marriage. In V. Gornick & B. K. Moran (eds.), Women in sexist society: Studies in power and powerlessness. New York: Mentor Books, pp. 145-162.

Bhanji, S. (1979). Anorexia nervosa: Physicians' and psychiatrists' opinions and practice. Journal of Psychosomatic Research, 23, 7-11.

Blum, H. P. (1977). Female psychology: Contemporary psychoanalytic views, (ed.). New York: International Universities Press.

Brandwein, R. A., Brown, C. A., & Fox, E. M. (1976). Women and children lost: Divorced mothers and their families. Nursing Digest, 4(1), 39-43.

Brothers, J. (1979, October). Work-related stress encountered by women. Gloucester City Times, p. A-4.

Broverman, I. K., Vogel, S. R., Broverman, D. M., Clarkson, F. E., & Rosenkrantz, P. S. (1972). Sex-role stereotypes: A current appraisal. Journal of Social Issues, 28, 59-78.

Brown, G. M. (1980). Psychiatric and neurologic aspect of endocrine disease. In D. T. Kireger and J. C. Hughes (eds.), Neuroendocrinology. Sunderland, Mass.: Sinauer Associates, pp. 185-193.

Chastain, S. (1980, June). Sexual pressure still a hazard for working women. Philadelphia Inquirer, p. 1-I, 12-I.

Chertok, L., Bourguignon, O., Guillon, F., & Aboulker, P. (1977). Urethral syndrome in the female ("irritable bladder"): The expression of fantasies about the urogenital area. Psychosomatic Medicine, 39, 1-10.

Chesler, P. & Goodman, E. J. (1976). Women, money, and power. New York: William Morrow.

Coffin, P. (1972). The young marrieds. In J. S. Delora & J. R. Delora (eds.), Intimate lifestyles: Marriage and its alternatives. Pacific Palisades, Calif.: Goodyear.

Cohen, M. J., Rickles, W. H., 7 McArthur, D. L. (1978). Evidence for physiological stereotyping in migraine headaches. Psychosomatic Medicine, 40, 344-354.

Colburn, P. & Buonassisi, V. (1978). Estrogen-binding sites in endothelial cell cultures. Science, 201, 817-819.

Colen, B. D. (1980), August). The valium explosion: All things to all people. Philadelphia Inquirer, pp. 1-G, 2-G.

Collins, A. & Frankenhaeuser, M. (1978). Stress responses in male and female engineering students. Journal of Human Stress, 4(2), 43-48.

Connor, W. E. & Connor, S. L. (1972). The key role of nutritional factors in the prevention of coronary heart disease. Preventive Medicine, 1, 49-83.

Constantine, L. L. & Constantine, I. M. (1971). Group and multilateral marriage: Definitional notes, glossary and annotated bibliography. Family Process, 10 157-176.

Cooper, K. H. (1977). The aerobics way. New York: M. Evans.

Cooperstock, R. (1978). Sex differences in psychotropic drug use. Social Science and Medicine, 12(3B), 179-186.

Crandon, A. J. (1979). Maternal anxiety and obstetric complications. Journal of Psychosomatic Research, 23, 109-111.

Curtis, J. (1976). Working mothers. Garden City, New York: Doubleday.

Department of Labor. (1978). Occupational outlook handbook, 1978-79 Edition. Washington, D.C.: U.S. Government Printing Office.

Donelson, J. H. (1978). Women in pharmacy - we've only just begun. American Journal of Pharmaceutical Education, 150(5), 165-168.

Donlon, P. T., Meadow, A., & Amsterdam, E. (1979). Emotional stress as a factor in ventricular arrhythmias. Psychosomatics, 20, 233-240.

Dugdale, M. & Masi, A. T. (1971). Hormonal contraception and thromboembolic disease: Effects of the oral contraceptives on hemostatic mechanisms. Journal of Chronic Diseases, 23, 775-790.

Dundon, S. (1980, August). The incredible shrinking Saturday. Philadelphia Inquirer, p. 10-A.

Editorial. (1976). Tensions cause MPD disorders in women. Journal of the American Dental Association, 92, 893.

Editorial. (1977, December). Loneliness really can kill you. Philadelphia Evening Bulletin, p. 23.

Editorial. (1980, June). Medicine: Capsules: Reassessing the pill's risks. Time, 115(26), 40.

Eliot, R. S. (1979). Stress and the major cardiovascular disorders. Mount Kisco, New York: Futura.

Employment and Training Administration. (1979). Health careers guidebook (4th ed.). Washington, D.C.: U.S. Government Printing Office.

Flor-Henry, P. (1978). Gender, hemispheric specialization and psychopathology. Social Science and Medicine, 12(3B), 155-162.

Friday, N. (1978). My mother/my self: The daughter's search for identify. New York: Dell Publishing.

Friedan, B. (1981). The second stage. New York: Summit Books.

Friedman, A. P. (1979). Characteristics of tension headache: A profile of 1,420 cases. Psychosomatics, 20, 451-461.

Friedman, M. & Rosenman, R. H. (1974). Type A behavior and your heart. New York: Knopf.

Gilat, T. & Rozen, P. (1979). Epidemiology of Crohn's disease and ulcerative colitis: Etiologic implications. Israel Journal of Medical Sciences, 15, 305-308.

Glass, D. C. (1977). Stress, behavior patterns and coronary disease. American Scientist, 65, 177-187.

Goodman, J. (1980, March). Don't let worries go to your head: Looking good. Philadelphia Evening Bulletin, p. WA4.

Goodman, L. S. & Gilman, A. (1975). The pharmacological basis of therapeutics (5th ed.). New York: Macmillan Publications, p. 483-495.

Gordon, V. C. (1979). Women and divorce: Implications for nursing care. In D. K. Kjervik & E. M. Martinson (eds.), Women in stress: A nursing perspective. New York: Appleton-Century-Crofts, pp. 260-275.

Gould, R. (1978). Transformations. New York: Simon & Schuster.

Gove, W. R. (1978). Sex differences in mental illness among adult men and women: An evaluation of four questions raised regarding the evidence on the higher rates of women. Social Science and Medicine, 12(3B), 187-198.

Grace, W. J. & Graham, D. T. (1952). Relationship of specific attitudes and emotions to certain bodily diseases. Psychosomatic Medicine, 14, 243-251.

Grace, W. J., Wolf, S., & Wolff, H. G. (1951). The human colon. New York: Paul B. Hoeber.

Graham, D. T., Lundy, R. M., Benjamin, I. S., Kabler, J. D., Lewis, W. C., Kunich, N. O. & Graham, F. K. (1962). Specific attitudes in initial interviews with patients having different psychosomatic diseases. Psychosomatic Medicine, 24, 257-266.

Greer, S. & Mooris, T. (1975). Psychological attributes of women who develop breast cancer: A controlled study. Journal of Psychosomatic Research, 19, 147-153.

Griffin, S. (1981). Pornography and silence. New York: Harper & Row Publishers.

Gross, B. (1979). Teaching under pressure. Santa Monica, California: Goodyear.

Gruchow, H. W. (1979). Catecholamine activity and infectious disease episodes. Journal of Human Stress, 5(3), 11-17.

Harris, B. (1979). Two lives, one 24-hour day. In A. Roland & B. Harris (eds.), Career and motherhood for a new identity. New York: Human Sciences Press, pp. 25-45.

Hartung, G. H., Foreyt, J. P., Mitchell, R. E., Vlasek, I., & Gotto, A. J., Jr. (1980). Relation of diet to high-density-lipoprotein cholesterol in middle-aged marathon runners, joggers, and inactive men. New England Journal of Medicine, 302, 357-361.

Helson, R. (1972). The changing image of the career woman. Journal of Social Issues, 28(2), 33-45.

Higano, N., Robinson, R. W., & Cohen, W. D. (1963). Increased incidence of cardiovascular disease in castrated women. New England Journal of Medicine, 268, 1123-1125.

Hoffman, L. W. & Nye, F. I. (1974). Working mothers. San Francisco: Jossey-Bass.

Holden, C. (178). Cancer and the mind: How are they connected? Science, 200, 1363-1369.

Holmes, T. H., Jaffe, J. R., Ketcham, J. W., & Sheehy, T. F. (1961). Experimental study of prognosis. Journal of Psychosomatic Research, 5, 235-252.

Hurst, M. W., Jenkins, C. D. & Rose, R. M. (1976). The Relation of Psychological Stress to Onset of Medical Illness. Annual Review of Medicine, 27, 301-312.

Ibrahim, M. A. (1980). The changing health state of women. American Journal of Public Health, 70, 120-121.

James, W. H. (1969). The effect of maternal psychological stress on the foetus. British Journal of Psychology, 115, 811-825.

Janeway, E. (1971). Man's world woman's place: A study in social mythology. New York: Dell Publishing.

Janis, I. L. & Mann, L. (1977). Coping with decisional conflict. In I. L. Janis (Ed.), Current trends in psychology. Los Altos, Calif.: William Kaufman, Inc.

Jenkins, C. D., Tuthill, R. W., Tannenbaum, S. I., & Kirby, C. (1979). Social stressors and excess mortality from hypertensive diseases. Journal of Human Stress, 5(3), 29-40.

Jick, H., Miettiner, O. S., Neff, R. K., Shapiro, S., Heinone, O. P., & Slone, D. (1973). Coffee and myocardial infarctions. New England Journal of Medicine, 289, 63-67.

Johansson, G. & Post, B. (1974). Catecholamine output of males and females over a one-year period. Acta Physiologica Scandinavica, 92, 557-565.

Jones, A. B. & Shapiro, E. C. (1979). The peak of the pyramid: Women in dentistry, medicine, and veterinary medicine. Annals of the New York Academy of Sciences, 323, 79-93.

Kestenberg, J. S. (1977). Regression and reintegration in pregnancy. In H. P. Blum (ed.), Female Psychology: Contemporary Psychoanalytic Views. New York: International Universities Press, pp. 213-250.

Kinzer, N. (1979). Stress and the american woman. Garden City, New York: Anchor Press.

Klebanoff, S. J. (1979). Effect of estrogens on the myeloperoxidase-medicated antimicrobial system. Infection and Immunity, 25, 153-156.

Kolata, G. B. (1980). NIH panel urges fewer cesarean births: The "once a cesarean, always a cesarean" dictum is not valid. Science, 210, 176-177.

Krupsak, M. A. (1977). Women in employment. In P. A. Carone, S. N. Kieffer, L. W. Krinsky & S. F. Yolles (eds.), Women in industry. Albany, New York: State University of New York Press, pp. 3-9.

Kudrow, L. (1978). Current aspects of migraine headaches. Psychosomatics, 19, 48-57.

Leavitt, F., Garron, D. C., & Bieliauskas, L. (1979). Stressing life events and the experience of low back pain. Journal of Psychosomatic Research, 23, 49-55.

Leff, D. N. (1975). Stress-triggered organic disease in this year of economic anxiety. Medical World News, 16, 74-92.

LeShan, L. (1966). An emotional life-history pattern associated with neoplastic disease. Annals of the New York Academy of Sciences, 125(3), 780-793.

Levin, A. (1980). Notes on a burned-out dental hygienist. Dental Hygiene, 54(1), 19, 40-43.

Lewis, H. B. (1978). Sex differences in superego mode as related to sex differences in psychiatric illness. Social Science and Medicine, 12(3B), 199-205.

Lopata, H. Z. (1971). Occupation: Housewife. New York: Oxford University Press.

McCarthy, C. (1980, August). Hazardous to health: Calmness drugs put under control. Philadelphia Inquirer, p. 5A.

McGill, H. C., Jr., Anselmo, V. C., Buchanan, J. M., & Sheridan, P. J. (1980). The heart as .target organ for androgen. Science, 207, 775-776.

McKeown, P. (1980, May). Women paying price for joining man's world. Philadelphia Evening Bulletin, pp. A1; 4.

McQuade, W. & Aikman, A. 91974). What it is, What it can do to your health, How to fight back. New York: E. P. Dutton.

Maccoby, E. E. & Jacklin, C. (1974). The psychology of sex differences. Stanford, Calif.: Stanford University Press.

Manber, M. (1976, January). The medical effects of coffee. Medical World News, 17, 63-73.

Manhold, J. H. (1979). Stress, oral disease, and general illness. Psychosomatics, 20, 83-87.

Mann, J. I. & Inman, W. H. W. (1975). Oral contraceptives and death from myocardial infarctions. British Medical Journal, 2, 245-248.

Mann, J. I., Vassey, M. P., Thorogood, M. & Doll, R. (1975). Myocardial infarction in young women with special reference to oral contraceptive practice. British Medical Journal, 2, 241-245.

Mannelli, M., Gheri, R. G., Selli, C., Turini, D., Pampanini, A., Giusti, G., & Serio, M. (1982). A study on human adrenal secretion. Measurement of epinephrine, norepinephrine, dopamine and cortisol in peripheral and adrenal venous blood under surgical stress. Journal of Endocrinological Investigation, 5(91), 91-95.

Margolis, J. R., Gillum, R. F., Feinleib, M., Brasch, R., & Fabsitz, R. (1976). community surveillance for coronary heart disease: The Framingham cardiovascular disease study. American Journal of Cardiology, 37, 61-67.

Martinson, I. M. & Anderson, S. (1979). Male and female response to stress. In D. K. Kjervik & I. M. Martinson (Eds.), Women in stress: A nursing perspective. New York: Appleton-Century-Crofts, pp. 89-95.

Marwell, G., Rosenfeld, R., & Spilerman, S. (1979). Geographic constraints on women's careers in academia. Science, 205, 1225-1231.

Mason, J. W., Buescher, E. L. Belfer, M. L., Arlenstein, M. W., & Mougey, E. H. (1979). A prospective study of cortico-steroid and catecholamine levels in relation to viral respiratory illness. Journal of Human Stress, 5(3), 18-28.

Maugh, T. H. II. (1973). Coffee and heart disease: Is there a link? Science, 181, 534-535.

Mechanic, D. (1978). Sex, illness behavior and the use of health services. Social Science and Medicine, 12(3B), 207-214.

Menguy, R. (1980). The prophylaxis of stress ulceration. New England Journal of Medicine, 302, 461-462.

Menikhelm, M. L. (1979). Communication patterns of women and nurses. In D. K. Kjervik & I. M. Martinson (eds.), Women in stress: A nursing perspective. New York: Appleton-Century-Crofts, pp. 133-143.

Mischel, W. (1970). Sex typing and socialization. In P. H. Mussen (ed.), Carmichael's manual of child psychology. New York: Wiley.

Mischel, W. (1976). Introduction to personality (2nd ed.). New York: Holt, Rinehart & Winston.

Miller, J. B. (1971). Psychological consequences of sexual inequality. American Journal of Orthopsychiatry, 41(5), 767-775.

Mills, F. J. & Marks, V. (1982, June). Human endocrine responses to acceleration stress. Aviation, Space and Environmental Medicine, 537-540.

Moos, R. H. & Solomon, G. F. (1965). Psychologic comparisons between women with rheumatoid arthritis and their non-arthritic sisters. Psychosomatic Medicine, 27, 150-164.

Moran, R. (1972). The singles in the seventies. In J. S. Delora & J. R. Delora (eds.), Intimate lifestyles: Marriage and its alternatives. Pacific Palisades, Calif.: Goodyear.

Morse, D. R. (1974). Clinical endodontology: A comprehensive guide to diagnosis, treatment and prevention. Springfield, Illinois: Charles C. Thomas.

Morse, D. R. & Furst, M. L. (1978). Stress and relaxation: Application to dentistry. Springfield, Ill.: Charles C. Thomas.

Morse, D. R. & Furst, M. L. (1979). Stress for success: A holistic approach to stress and its management. New York: Van Nostrand Reinhold.

Morse, D. R. & Furst, M. L. (1981). Stress and the oral cavity. In H. Selye (ed.), Selye's guide to stress research. Vol. 2 New York: Van Nostrand Reinhold.

Morse, D. R. & Furst, M. L. (1982). Women under stress. New York: Van Nostrand Reinhold Company.

Moss, V. (1977). Financial problems of women. In D. A. Carone, S. N. Kieffer, L. W. Krinsky, & S. F. Yolles (eds.), Women in industry. Albany, New York: State University of New York Press, pp. 77-112.

Murphy, H. B. M. (1978). Historic changes in the sex ratios for different disorders. Social Science and Medicine, 12(3B), 143-149.

Nagi, S. Z., Riley, L. E., & Newby, L. G. (1973). A social epidemiology of back pain in a general population. Journal of Chronic Diseases, 26, 769-779.

Natelson, B. H. & Cagin, N. A. (1979). Stress-induced ventricular arrhythmas. Psychosomatic Medicine, 41, 259-262.

Neill, W. A., Wharton, T. P., Jr., Fluri-Lundeen, J., & Cohen, I. S. (1980). Acute coronary insufficiency: Coronary occlusion after intermittent ischemic attacks. New England Journal of Medicine, 302, 1157-1162.

Nelson, A. H. (1977). The women in the labor organization. In P. A. Carone, S. N. Kieffer, L. W. Krinsky & S. F. Yolles (eds.), Women in industry. Albany, New York: State University of New York Press, pp. 10-42.

Newton, R. W., Webster, P. A. C., Binu, P. S., Maskrey, N., & Phillips, A. B. (1979). Psychological stress in pregnancy and its relationship to the onset of premature labour. British Medical Journal, 2, 411-413.

Norris, C. (1977). Is your back biting back? Dental Management, 17(11), 57-60.

O'Neill, G. & O'Neill, N. (1972). Open marriage. New York: Avon.

Parker, D. A., Wolz, M. W., Parker, E. S. & Harford, T. C. (1980). Sex roles and alcohol consumption: A research note. Journal of Health and Social Behavior, 21, 43-48.

Paykell, E. S. (1976). Life stress, depression and attempted suicide. Journal of Human Stress, 2(3), 3-12.

Pearson, D. & Shaw, S. (1982). Life extension: A practical scientific approach. New York: Warner Books, Inc.

Pederson, O., Beck-Nielsen, H., and Heding, L. (1980). Increased insulin receptors after exercise in patients-dependent diabetes mellitus. New England Journal of Medicine, 302, 886-892.

Petrich, J. & Holmes, T. H. (1977). Life changes and onset of illness. Medical Clinics of North American, 61, 825-838.

Pettingale, K. W. Greer, S., & Tee, D. E. H. (1977). Serum IGA and emotional expression in breast cancer patients. Journal of Psychosomatic Research, 21, 395-399.

Pflanz, M. (1978). Sex differences in abdominal illness. Social Science and Medicine, 12(3B), 171-176.

Potts, N. D. (1979). The relationship between married, maternal women's employment and psychological stress (Doctoral dissertation, University of Houston, Texas, 1979). Dissertation Abstracts International, 1287A-1288A.

Powell, B. & Reznikoff, M. (1976). Role conflict and symptoms of psychological distress in college educated women. Journal of Consulting and Clinical Psychology, 44, 473-479.

Public Health Service. (1979). Smoking and health: A report of the surgeon general. Washington, D.C.: U.S. Government Printing Office.

Rahe, R. H. (1979). Life change events and mental illness: An overview. Journal of Human Stress, 5(3), 2-10.

Rahe, R. H., Ryman, D. H. & Biersner, R. J. (1976). Serum uric acid, cholesterol, and psychological moods throughout stressful naval training. Aviation, Space and Environmental Medicine, 47, 883-888.

Reinhard, J. F., Jr., Bannon, M. J., & Roth, R. H. (1982). Acceleration by stress of dopamine synthesis and metabolism in prefrontal cortex: Antagonism by diazepam. Naunyn-Schmiedeberg's Archives of Pharmacology, 318, 374-377.

Rising, S. S. (1979). Childbearing: Its dilemmas. In D. K. Kjervik & I. M. Martinson (eds.), Women in stress: A nursing perspective. New York: Appleton-Century-Crofts, pp. 116-132.

Rockmore, M. (1980, March). From the top: Why are doctors so suicide prone? Philadelphia Sunday Bulletin, mag. 16.

Rosenfield, S. (1980). Sex differences in depression: Do women always have higher rates? Journal of Health and Social Behavior, 21(3), 33-42.

Roskies, E. (1978). Sex, culture and illness: An overview. Social Science and Medicine, 12(3B), 139-141.

Roth, K. A., Mefford, I. M., & Barchas, J. D. (1982). Epinephrine, norepinephrine, dopamine & serotoin: Differential effects of acute and chronic stress on regional brain amines. Brain Research, 239, 417-424.

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 80, 1-28.

Rueschemeyer, M. R. (1978). Personal life and the demands of work: An exploratory study of professional men and women in the United States and two socialist societies (Doctoral dissertation, Brandeis University, 1978). Dissertation Abstracts International, 7599A.

Schless, A. P., Teichman, A., Mendels, J., & DiGiacomo, J. N. (1977). The role of stress as a precipitating factor of psychiatric illness. British Journal of Psychiatry, 130, 19-22.

Schuckit, M. A. & Morrissey, M. A. (1979). Drug abuse among alcoholic women. American Journal of Psychiatry, 136, 607-611.

Seligman, M. (1968). Chronic fear produced by unpredictable electric shock. Journal of Comparative Physiological Psychology, 66, 402-411.

Selye, H. (1952). The story of the adaptation syndrome. Montreal: Acta Inc., Medical Publishers.

Selye, H. (1976a). The stress of life, (rev. ed.). New York: McGraw-Hill.

Selye, H. (1976b). Stress in health and disease. Boston: Butterworth Publishers, Inc.

Selye, H. (1977). The evolution of the stress concept. In I. L. Janis, (ed.), Current trends in psychology. Los Altos, Calif.: William Kaufman, Inc.

Sexton, D. (1981). Stress levels of mothers as related to marital status. Unpublished manuscript, University of Missouri-Kansas City.

Shaw, L. (1979). The spasm theory of heart attack. Prevention, 31(10), 106-110.

Sheehy, G. (1976). Passages: Predictable crisis of adult life. New York: Dutton.

Sheridan, C. L. (1981a). The scale of stress assessment, Part II-Inventory of stressors. Kansas City: University of Missouri.

Sheridan, C. L. (1981b). The inventory of health status. Kansas City: University of Missouri

Sheridan, C. L. (1981c). The inventory of stress resistance resources. Kansas City: University of Missouri.

Shiner, G. (1980). Anorexia nervosa studied at several centers. Research Resources Reporter, 4(5), 1-7.

Sifford, D. (1977, April). How does spouse cope when the other's career begins to zoom? Philadelphia Inquirer, pp. 1-C, 3-C.

Simpson, P. (1979, May). Pregnant workers have a tough ally: Attitudes, policies in the working world are changing, thanks to the new baby law. Parade, 31-32.

Skinner, J. E. (1980). The brain: Heart-attack trigger. Psychology Today, 14(2), 124.

Stein, A. H. & Bailey, M. M. (1973). The socialization of achievement orientation in females. Psychological Bulletin, 80, 345-366.

Stein, L. (1967). The doctor-nurse game. Archives of General Psychiatry, 16, 699-703.

Stewart, A. J. & Salt, P. (1981). Life stress, life depression and illness in adult women. Journal of Personality and Social Psychology, 40(6), 1063-1069.

Stumpf, W. E., Sar, M., & Aumuller, G. (1977). The heart: A target organ for estradiol. Science, 196, 319-320.

Sword, R. O. (1977). The depression-prone personality: Almost "too good" to be true. Dental Survey, 53(3), 12-18.

Theorell, T. (1979). Life events and disease: Psychosocial precipitation of episodes of clinical coronary heart disease. Journal of Psychosomatic Research, 23, 403-404.

Turlopaty, P. D. M. V. & Altura, B. M. (1980). Magnesium deficiency produces spasms of coronary arteries: Relationship to etiology of sudden death ischemic heart disease. Science, 208, 198-202.

Tung, R. L. (1980). Comparative analysis of occupational stress profiles of male versus female administrators. Journal of Vocational Behavior, 17(3), 344-355.

Veysey, L. (1974). Communal sex and communal survival. Psychology Today, 8(8), 73-78.

Waldron, I. (1978). Type A behavior pattern and coronary heart disease in men and women. Social Science and Medicine, 12(3B), 167-170.

Waldron, I., Zyzanski, S. J., Shekelle, R. B., Jenkins, C. D., & Tannenbaum, S. (1977, December). The coronary-prone behavior pattern in women. Journal of Human Stress, 2-18.

Weiner, H. (1977). Psychobiology and human disease. New York: Elsevier.

Weinsler, R. L. (19 5). Overview: Salt and the development of essential hypertension. Preventive Medicine, 5, 7-14.

Weisenlee, M. (1979). Nursing's future role. In D. K. Kjervik & Im. M. Martinson (eds.), Women in stress: A nursing perspective. New York: Appleton-Century-Crofts, pp. 59-85.

Weissman, M. M., & Klerman, G. L. (1977). Sex differences and the epidemiology of depression. Archives of General Psychiatry, 34, 98-111.

White, B. C., Lincoln, C. A., Pearce, N. W., Reeb, R., & Vaida, C. (1980). Anxiety and muscle tension as consequences of caffeine withdrawal. Science, 209, 1547-1548.

Williams, J. H. (1977). Psychology of women: Behavior in a biosocial context. New York: W. W. Norton.

Wolf, S. & Goodell, H. (1968). Harold G. Wolff's stress and disease (2nd ed.), Springfield, Illinois: Charles C. Thomas.

Ziegler, D. K. (1979). Headache syndromes: Problems of definition. Psychosomatics, 20, 443-447.

Zuckerman, M. & Lubin, B. (1965). Multiple affect adjective check list: Manual. San Diego, California: Educational & Industrial Testing Service.